Sales manual for LONGTON AVIA Euro5

Introduction

This sales manual is intended as a quick reference guide for locating key information and basic technical specifications for LONGTON AVIA Trucks. The information presented here is intended as a guide to inform and assist in the selling of LONGTON AVIA Trucks (this information will be gradually updated).

This manual has a logical structure based on the AVIA Truck Konfigurator?
Each section has independent content and commences with an introduction of the corresponding part in the vehicle specification. It then follows with a separate description.

(chapters):

- Product line
- Traction
- Steering
- GVW
- Differential lock
- Rear axle suspension
- ABS
- ASR
- Wheel
- Tyres dimension
- Tyre brand
- Engine
- Gearbox
- Rear axle ratio
- PTO WB
- Mudguards
- Side protection
- Spare wheel holder
- Spare wheel
- Fuel tank
- Cab
- Rear window
- Locking
- Windows operation
- Mirrors operation
- Mirrors arrangement
- Head lights levelling
- Fog light
- Speedometer
- Tachograph
- Driver's seat
- Co-driver's seat
- Bunk
- Curtain
- Air-conditioning
- Immobiliser
- Lighter
- Digital clock
- Colour
- Mask colour finish
- Bumper colour
- finish Colour type
- Body width
- Door turning lights
- Towing equipment
- Batteries
- Voltage Convertor 24V/12V
- Speed limiter
- Instruction language
- Reverse warning
- Mandatory equipment
- Road Relay
- Supply form
- Warranty
- Preservation

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1 Truck version

1 Truck version

1.1 European Emission standards
1.2 Traction
1.3 Steering

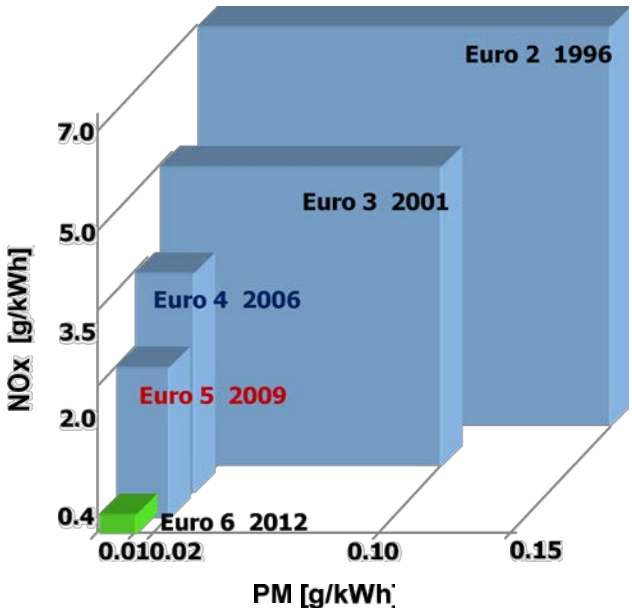
1.1 European emission standards

In accordance with directive 74G/2008 EEC it is possible from 1st of October 2009 to register , within all EU countries a truck that meet's all the directive's requirements of EURO 5 emissions

This directive restricts the quantities of:

Nitrogen oxides NO_x
particulate matters PM
hydrocarbons HC
Carbon monoxide (CO)

EURO5 restricts the quantity of all these pollutants



1.1.1 SCR or AGR

What is it?

EGR – exhaust gas recirculation
SCR – Selective catalytic reduction

LONGTON AVIA has selected SCR as the current Cummins engine uses this system.

Significant points about this system:

- Cummins engines with SCR have about 7% less fuel consumption by comparison with the Euro3 Cummins engine
- Engines with the EGR system indicate about 2% worse fuel consumption as this system requires a rich air/fuel mixture for better combustion of re-circulated exhaust gases.
- It is necessary to include AdBlue consumption in the calculations for the SCR, but working experiences indicates that SCR has a better overall operational cost (fuel consumption + AdBlue consumption).

Weights:

- SCR system = aprox. 60-120 kg plus the curb weight of chassis
- EGR system = Increased weight but less than SCR due to the use of different components (turbocharger, heat exchanger, valves etc.)

Maintenance:

- SCR system needs only a periodical change of air filter for the AdBlue injection unit.

Performance:

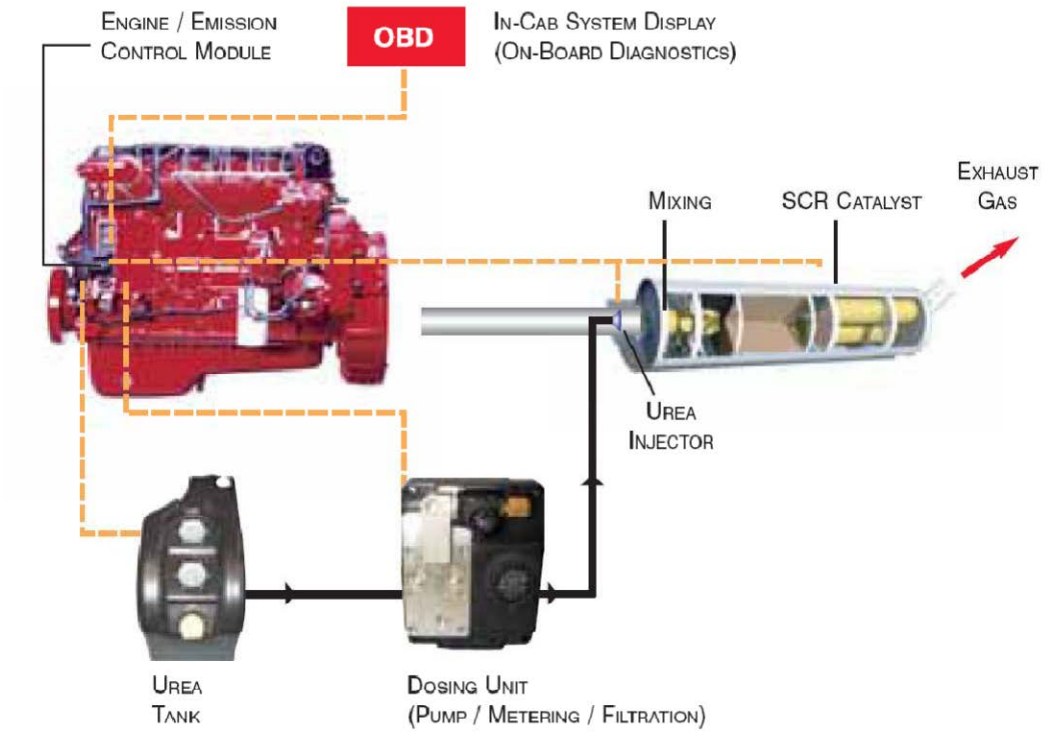
- The SCR system delivers approximately a 10% higher engine performance and higher torque as the engine is working at optimal settings.
- The EGR system needs necessary technical changes for the same performance and torque (on the engines Euro3 and Euro4)

Both systems are now able meet EEV conditions (EEV - Enhanced environmentally friendly vehicle)

1.1.2. AdBlue

AdBlue is the registered trademark for AUS32 (Aqueous Urea Solution 32.5%) and is used in a process called selective catalytic reduction (SCR) to reduce emissions of oxides of nitrogen from the exhaust of diesel engined motor vehicles. As the name AUS32 would suggest, it is a 32.5% solution of high-purity urea in demineralised water that is clear, non-toxic and is safe to handle. AdBlue tank on LONGTON AVIA Trucks have capacity 30lts. AdBlue consumption is aprox. 2-3% of diesel consumption. To prevent freezing the AdBlue tank is heated.

1.1.2 Description of the SCR system functions



Combustion process:

fuel + air → main emissions parts + emissions in trace amount

CxHySz + O2 + N2 → CO2 + H2O + N2 + O2 + NOx + HC + CO + SOx + C

SCR process:

Reduction process NO_x with AdBlue help (NH_3):

$4NH_3$ + 4NO + O2 → 4N2 + 6H2O

$2NH_3$ + NO + NO2 → 2N2 + 3H2O

$8NH_3$ + $6NO_2$ → 7N2 + 12H2O

SCR is able to reduce 90% of NOx.

1.1.3 New parameters and features on Euro5 chassis

Fuel system

- ../ Move from 1600bar to increased capability 1800bar injection system
- ../ Filtration requirements changed to 10 micron pre-filter & 3 micron on engine filter (Euro4 is 25 & 5 micron respectively)
- ../ New water separator with manual pump (pict.3)

Control system

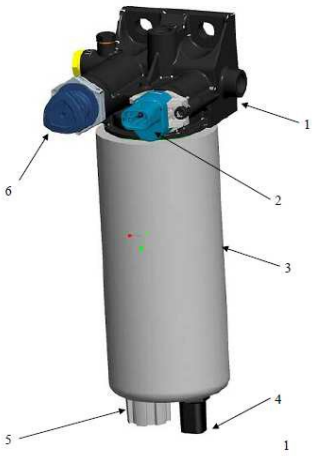
- ../ Move from CM850 to CM2150E ECM – increased capability for OBD requirements

ECM requires 70-seconds to shut-down between key-off and isolator switch off

SCR system

- ../ Ammonia Oxidation (slip) Catalyst standard on E5 designs
- ../ EGP envelope size does not increase
- ../ New design dosing nozzle to optimize AdBlue mixing
- ../ Thermistors move further apart to allow for longer Catalysts
- ../ SCR control on dashboard (pict.4)

Pict.2



Pict.3

Pict.4

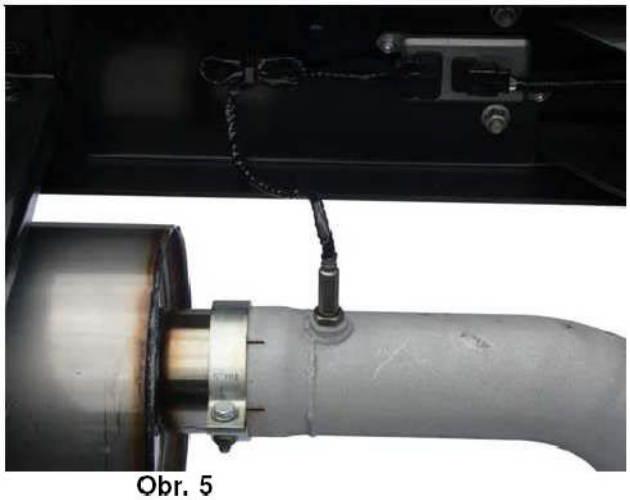
1.1.4 New features and settings on Euro5 chassis

From 1st October 2007 trucks must show an indication of the AdBlue tank status.

LONGTON AVIA trucks have this indication on the dashboard using diodes (pict.4)

There is a NOx sensor on the exhaust pipe from the silencer, which controls the correct function of the SCR system (pict.5). When the exhaust gases exceed allowable NOx limits, the driver is informed by indication on the dashboard. When the SC system malfunctions, the engine performance is reduced by 60% of standard performance after a restart. This low performance is sufficient to reach a service centre or to refill the AdBlue tank if appropriate.

Obr. 4



Obr. 5

1.2 Traction

1.1.1 Traction (2WD) 4x2

All LONGTON AVIA trucks are offered in 4x2 configurations with two possible rear axles

1.1.2. Traction (4WD) 4x4

D-120 is available in 4x4 configurations

.

1.3 Steering

LONGTON AVIA Trucks are available in both Left Hand Drive (LHD) and Right Hand Drive (RHD) configuration.

2 Gross Vehicle Weight (GVW)

2 Gross Vehicle Weight (GVW)

2.1 GVW
2.1.1 LONGTON AVIA 7,5t
2.1.2 LONGTON AVIA 9t
2.1.3 LONGTON AVIA 12t

Note: For current specification check the Konfigurator.

2.1 GVW

LONGTON AVIA trucks are offered in GVW from 5.990 to 11.990 kg. Basic groups of GVW 75, 90 and 120.

Model	GVW
LONGTON AVIA D75	5.990 kg 7.490 kg 8.000 kg 8.490 kg
LONGTON AVIA D100	9.000 kg 10.000 kg 11.000kg
LONGTON AVIA D120	11.990 kg

2.1.2 D75 GVW variants

GVW (kg)							
		weight		front axle		rear axle	
WB	GVW	Chassis	max. payload	max. load	Chassis weight	max. load	Chassis weight
K	7.490	3325	4165	3400	2168	5200	1157
N		3374	4116		2206		1168
L		3423	4067		2247		1180
E		3472	4018		2287		1185
S		3521	3969		2327		1194

Gross Combination Weight (GCW):

- Truck + trailer without brake 8.240 kg
- Truck + trailer with overrun brake 10.990 kg
- Truck + trailer with airbrakes 11.990kg

2.1.2 D100 GVW variants

GVW (kg)							
		weight		front axle		rear axle	
WB	GVW	Chassis	max. payload	max. load	Chassis weight	max. load	Chassis weight
K		3393	5607		2183		1210
N		3442	5558		2221		1221
L	9.000	3491	5509	3400	2262	6200	1229
E		3540	5460		2302		1238
S		3589	5411		2342		1247

Gross Combination Weight (GCW):

- Truck + trailer without brake 9.750 kg
- Truck + trailer with overrun brake 12.950 kg
- Truck + trailer with airbrakes 18.000kg

2.1.3. D120 GVW variants

GVW (kg)							
		weight		front axle		rear axle	
WB	GVW	Chassis	max. payload	max. load	Chassis weight	max. payload	Chassis weight
N		3385	8405		2305		1280
L		3635	8355		2344		1291
E	11.990	3685	8305	4200	2386	8200	1291
S		3735	8255		2426		1309
G		3794	8196		2465		1329

Gross Combination Weight (GCW):

- Truck + trailer without brake 12.740 kg
- Truck + trailer with overrun brake 15.490 kg
- Truck + trailer with airbrakes 21.990 kg

2.2 Usual weight restriction

Type	GVW	Describe
D60	5.990 kg	no city centre restriction no weekends restriction GCW with trailer till 11.990 kg
D75	7.490 kg	no weekends restriction no city centre restriction
D80	8.000 kg	-
D85	8.500 kg	GCV with 3.500 kg trailer 11.990kg
D90	9.000 kg	-
D100	10.000 kg	
D110	11.000 kg	-
D120	11.900 kg	no Maut payment (different in whole Europe)

3 Axles & suspension

3 Axles & suspension

3.1 Front axle & suspension
3.2 Rear axle
3.3 Rear axle suspension
3.3.1 Parabolic leaf suspension
3.3.2 Air suspension
3.4 Differential & differential lock

Note: For current specification check the Konfigurator.

3.1 Front axle & suspension

Axle	F36 (6 nuts)		F48 (8 nuts)	
Max.technical load	3.600 kg		4.800 kg	
Max. permissible load	3.400 kg	3.500 kg	4.000 kg	4.200 kg
D60	•			
D75	•			
D80	•			
D85	•			
D90	•			
D100		•		
D110			•	
D120				•

Leaf dimensions, rigidity	1.700 x 80 mm; 115 N/mm	1.700 x 80 mm; 115 N/mm
leaf quantity	2	
cross leaf pitch	800 mm	
Stabilisator	Ø 32	Ø 40
Shock absorbers	standard	

Description:
The Front axle is a rigid axle mounted with the steering components, suspended from the chassis via parabolic leaf springs with two telescopic hydraulic shock-absorbers. The Front axle is in "I" profile member. The Parabolic leaf springs are mounted on the chassis rails. In front they are mounted on rigid pins, on the rear on swinging arms. There are rubber buffers on the chassis opposite the axle. To maintain the highest levels of truck stability it is fitted with a torsion bar (anti-roll bar) connected to the chassis (pict.1)

3.2. Rear axle

Axle	SR 5.14 (6 nuts)		SR 8.20 (6 nuts)			SR 8.20 (8 nuts)	
Max.technical load	5.250 kg		6.700 kg			8.500 kg	
Max. permissible load	4.100 kg	5.200 kg	5.800 kg	6.200 kg	6.600 kg	7.400 kg	8.200 kg
D60	•						
D75		•					
D80		•					
D85			•				
D90				•			
D100					•		
D110						•	
D120							•

Description:
The rigid rear axle is mounted on brackets and swing arms for the air suspension. In front they are mounted on the chassis rails using pivot bolts. At the rear are holders behind the axle attached to the frame with rubber air bellows. To increase the suspension rigidity both are joined by a fixed cross –

Obr. 2

3.3 Rear axle suspension

This suspension together with shock-absorbers provide comfort and safety in all driving conditions (braking, driving in curves and etc.) and under various loads..

Axle	SR 5.14 (6 nuts)		SR 8.20 (6 nuts)			SR 8.20 (8 nuts)	
Max.technical load	5.250 kg		6.700 kg			8.500 kg	
Max. permissible load	4.100 kg	5.200 kg	5.800 kg	6.200 kg	6.600 kg	7.400 kg	8.200 kg
D60	•						
D75		•					
D80		•					
D85			•				
D90				•			
D100					•		
D110						•	
D120							•

Leaf dimensions, rigidity	1.700 x 80 mm; 115 N/mm	1.700 x 80 mm; 115 N/mm
leaf quantity	2 + 1	
cross leaf pitch	1030 mm	
Stabilisator	Ø 32	Ø 40
Shock absorbers	standard	

3.3.2 Air suspension

Axle	SR 8.20 (8 nuts)	
Max.technical load	8.500 kg	
Max. permissible load	7.400 kg	8.200 kg
D110	●	
D120		●

Stabilisator	not fitted
Shock absorbers	standard
excursion	160 mm
Highest excursion level	driving level + 80 mm
Lowest excursion level	driving level - 80 mm

Description:
The rigid rear axle is mounted on brackets and swing arms for the air suspension. In front they are mounted on the chassis rails using pivot bolts. At the rear are holders behind the axle attached to the frame with rubber air bellows. To increase the suspension rigidity both are joined by a fixed cross – member pict.3

Obr. 3

Air suspension on rear axle allows:

- To maintain chassis height with varying payload (ideal for maximum height superstructure, 4 meters total truck height)
- Ability to raise floor height for different loading/unloading dock height's
- Hold same chassis height in time of loading/unloading truck
- Avoiding roll in laterally uneven load distribution

Air suspension may be set from the cab by remote control (pict.4) unit for air suspension - ECAS (Electronically Controlled Air Suspension). If the chassis height is not set for appropriate driving height, the ECAS control indicates an orange colour.

Obr. 4

Remote control buttons have following functions:

Button for ECAS activation

Button for driving height set

Button for chassis height increasing

Button for chassis height decreasing

Two memory buttons

STOP button – direct stop of chassis height change

3.4 Differential & differential lock

The Differential (pict.5) is a special gearbox which is allows the distribution of torque from one propeller shaft to two axle shafts and also distribute torque in time when both shafts need different revolutions (for example driving in curves). Differential major disadvantages are mechanical losses and incorrect torque transmission when the grip on both wheels is different, thus causing potential slip from one of the wheels. This problem is solved by the differential lock. This lock locks up the rotation of the differential pinion gear i.e. the same number of revolutions on both axle shafts (pict.6)

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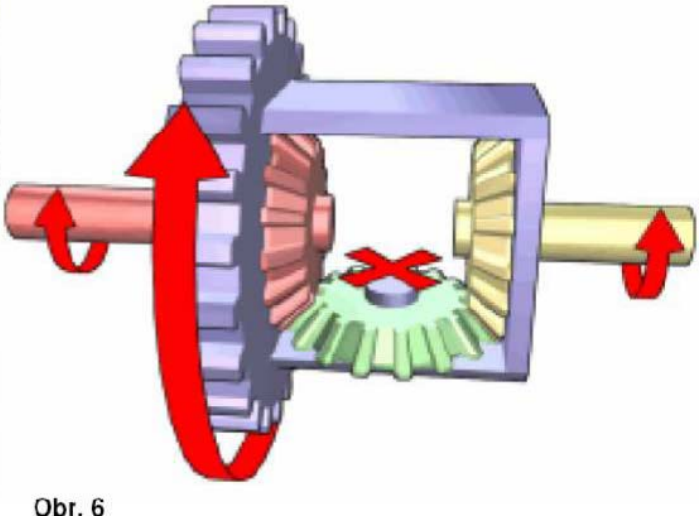
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4 Brake system

4 Brake systems

4.1 Brake pads status indication
4.2 Compressed air distribution
4.3 Next major components of brake air system and their functions
4.4 Driving brake
4.5 Parking brake
4.6 Exhaust brake
4.7 ABS
4.8 ASR
4.9 Braking system diagram

Note: For current specification check the Konfigurator.

LONGTON AVIA Chassis have fitted as standard (Wabco) air cooled discs brakes on both axles. This air brake system works with a nominal pressure 0,85 MPa.

4.1 Brake pads status Indication

Brake pads have a compulsory brake wear sensor which indicates to the driver the brake wear condition with a warning light on the instrument panel (pict.1.).

4.2 Compressed air distribution

Air circuits are filled with compressed air from the air compressor which is powered by the engine. (pict.1) – 2 x 30 litre tanks + 1x 10 litre tank. Filling the air circuit is effected through a heated air dryer, multi circuit protection valve?(pict.2) and minimum pressure sensors.

Obr. 1

Obr. 2

Obr. 3

Obr. 4

The multi circuit protection valve distributes pressurised air in to the independent circuits. In the case that one of these circuits malfunctions or fails, this valve prevents air leakage from other circuits.
Pressured air circuits:

1. Brakes on rear axle
2. Brakes on front axle
3. Parking brake
4. Others – PTO, engine brake, differential lock, power clutch, air seat etc.

If one braking circuit fails, the remaining functioning circuit will replace the air supply to achieve sufficient braking force for the safe operation of the vehicle.

4.3 Other important components of air brake systems and their functions

- ABS valve - control the braking forces depending on the grip
  (pict.5) Diaphragm cylinder - valve front axle service brake (pict.5)
- Automatic load controller - controls the braking force dependant on rear axle load. (pict.3)
- Combined drum - rear axle control valve (service and parking brake)
- Relay valve - supply management for combined air cylinder rear axles, quick aeration and venting
- Trailer control valve - control double-circuit trailer brake system
  (pict. 4) Coupling head - for trailers coupling
- The main control valve - the brake pedal operation

- Hand brake valve - operated parking brake
- Pressure Sensors - Pressure Monitoring
- Electro-pneumatic valves - for control of PTO, exhaust brake, differential lock
- Power clutches and clutch cylinder

For a more detailed diagram, see end of this chapter.

4.4. Service brake

Diaphragm brake cylinder Wabco PAN 17 disc brakes are controlled via a two circuits foot pedal. The pressure controls actuators, and thus the braking effect, provides the automatic mechanical brake pressure regulator (late electronic).

Note: Defective leaf springs or a reduction in their rigidity may result in unsafe braking operation!!!

4.5. Parking brake

The parking brake is activated by a manual brake valve and operates on the rear wheels. The park brake utilises compressed air from storage tanks. The release of the air is activated by the parking brake of the towing vehicle. In the case of a vehicle intended for use in combination with a trailer use the hand brake valve test position.

Note:
Using the parking brake while driving is dangerous as it may lock the rear axle!

Note:
The trailer vents stored air (pressure loss) for the brakes to release!

The Test position of the parking brake valve, allows the driver to test the reliability in a loss of pressure in the perimeter parking brake e.g. a towing truck with trailer are braked only by the towing truck!

4.6. Exhaust brake

For normal driving it is beneficial to use the exhaust brake as this will extend the life of brake pads and fuel economy. When activated the exhaust brake flap closes the exhaust pipe and at the same time there is a disruption in the supply of fuel to the engine. Engine Braking force is then transmitted to the rear wheels via the driveline – engine, gearbox, propeller shaft, axle drive (differential) and wheels. The Exhaust brake is operated by the lever on the right hand side of the steering column (pict.6). Control method is described in the operation manual for LONGTON AVIA vehicles.

The exhaust brake is automatically taken out of service when:

- The Driver uses the clutch pedal
- The ABS system is active
- Engine rotation's are below the limit

Exhaust brake is automatically activated when the truck speed exceeds 3km/h of the speed set on the cruise control.

Obr. 6

Note:
Exhaust brake efficiency is dependent on engine speed, or the selected gear.
Power of exhaust brake is 30kW from 2.000 – 2.500 rpm

4.7 ABS

All LONGTON AVIA vehicles are equipped with a legally required, ABS braking system (Anti-lock Brake System). ABS has the function of avoiding wheel lock up when braking in critical situations.

ABS Benefits:

- Ensures stable behaviour when braking on all roads
- Retains control of the vehicle
- Optimizing the braking slippage reduces the braking distance
- Prevents jack-knifing
- Decrease tyres abrasion

ABS is set to achieve maximum braking force while maintaining sufficient lateral guidance of the vehicle. The optimal wheel slip percentage is from the perspective of setting the ABS range 10 – 30% (0% - rolling, 100% - locked wheels)

Allowed/Prohibited combination with trailer

Truck & trailer combination Towing vehicle tractor/chassis	trailer	Allowed/Prohibited truck & trailer combination
ABS	**ABS**	**YES**
ABS	**-**	**NO! Trailer ABS disorder warning**
-	**ABS**	**YES**
-	**-**	**YES**

In prohibited truck & trailer combination there can be a dangerous break of combination with skidding or worse from thetrailer! (pict.7)

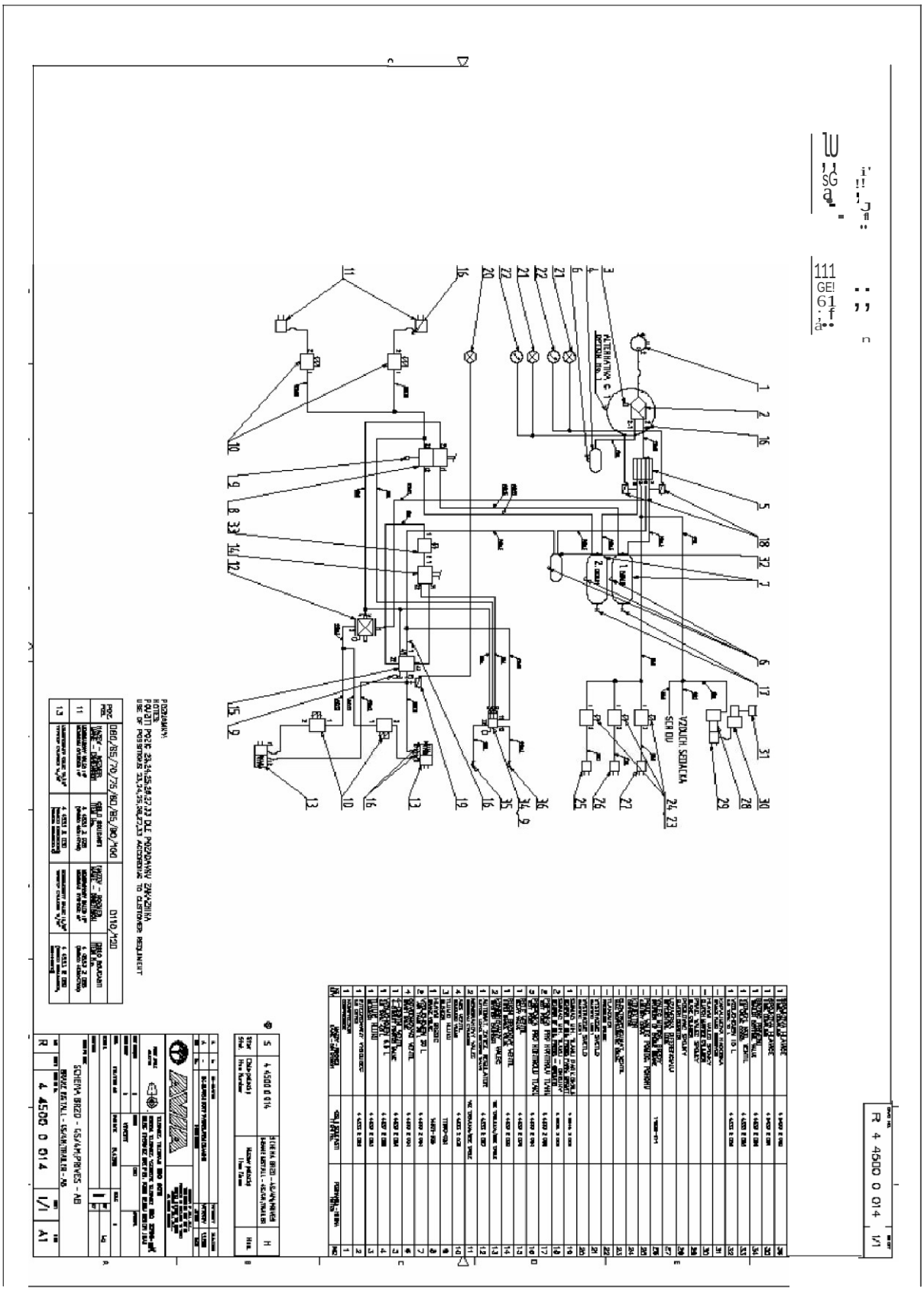
4.8 ASR

Because LONGTON AVIA chassis are fitted with air brakes it is possible to order an ASR (Anti Slip Regulation) system. This system prevent loss of traction of the driven road wheels and therefore maintains control of the vehicle when excessive throttle is applied by the driver and the condition of the road surface (due to varying factors) is unable to cope with the torque applied.

Benefits:

- Truck stability in time of start and acceleration
- Traction increasing
- Off-road traction increasing in combination with differential lock
- Decreasing tyres abrasion

4.9 Brake system diagram



5 Rims & Tyres

5 Rims & Tyres

5.1 General dimension, tyres load and rims dimensions
5.2 Tyres offer
5.3 Rims

ATK: For actual possibilities use valid specification in Konfigurator.

5.1 General dimension, tyres load and rims dimensions

These values are for information. Exact values depend on the size and tyre manufacturer. For correct information please refer to the manufacturer.
Those are the maximum load capacity for a given tyre size. Individual manufactures may have different loadings. The sheet below details loading capacity for single and twin tyre configurations.

Tyre dimension	max. permitted axle load		Speed index	Loaded tyre diameter		Rim dimension
	single	twin		Static	Dynamic	
205/75 R17,5	3 200	6 000	M	352	365	17,5 X 6,00
215/75 R17,5	3 400	6 400	M	358	372	17,5 X 6,00
225/75 R17,5	3 700	7 000	M	366	380	17,5 X 6,00
9,5 R17,5	3 700	7 000	L	398	409	17,5 X 6,00
235/75 R17,5	4 000	7 600	M	372	387	17,5 X 6,75
10 R17,5	4 240	8 000	L	398	417	17,5 X 6,75
245/70 R17,5	4 480	8 480	L	368	382	17,5 X 6,75
245/70 R19,5	4 480	8 480	M	394	407	19,5 X 7,50
265/70 R19,5	5 000	9 440	M	406	421	19,5 X 7,50

Tyre choice affects Ground clearance and traction characteristics of the vehicle.

5.2 Tyres offer

Product range may be limited by the state for immediate delivery from suppliers.
Current Suppliers:

- Goodyear
- Dunlop
- Pirelli
- Continental
- Sava

All manufactures do not supply all sizes!

5.3 Rims

Rims are painted silver RAL 9006 (pict.1) On front rims are fitted nut covers. Covers are delivered in two versions:

- Black plastic cover (pict.1) – is fitted on chassis from 6 to 10 tons GWV (6 nuts)
- Black painted steel cover (pict.2) – is fitted on chassis 11 and 12 tons GWV (8 nuts)

Obr.1

Obr. 2

6 Driveline

6 Driveline

6.1 Euro 5
6.2 Engine
6.3 Gearbox
6.4 Clutch
6.5 Propeller shaft
6.6 Rear axle ratio
6.7 Drive line parameters
6.8 Towing force

ATK: For actual possibilities use valid specification in Konfigurator.

6.1 Euro 5

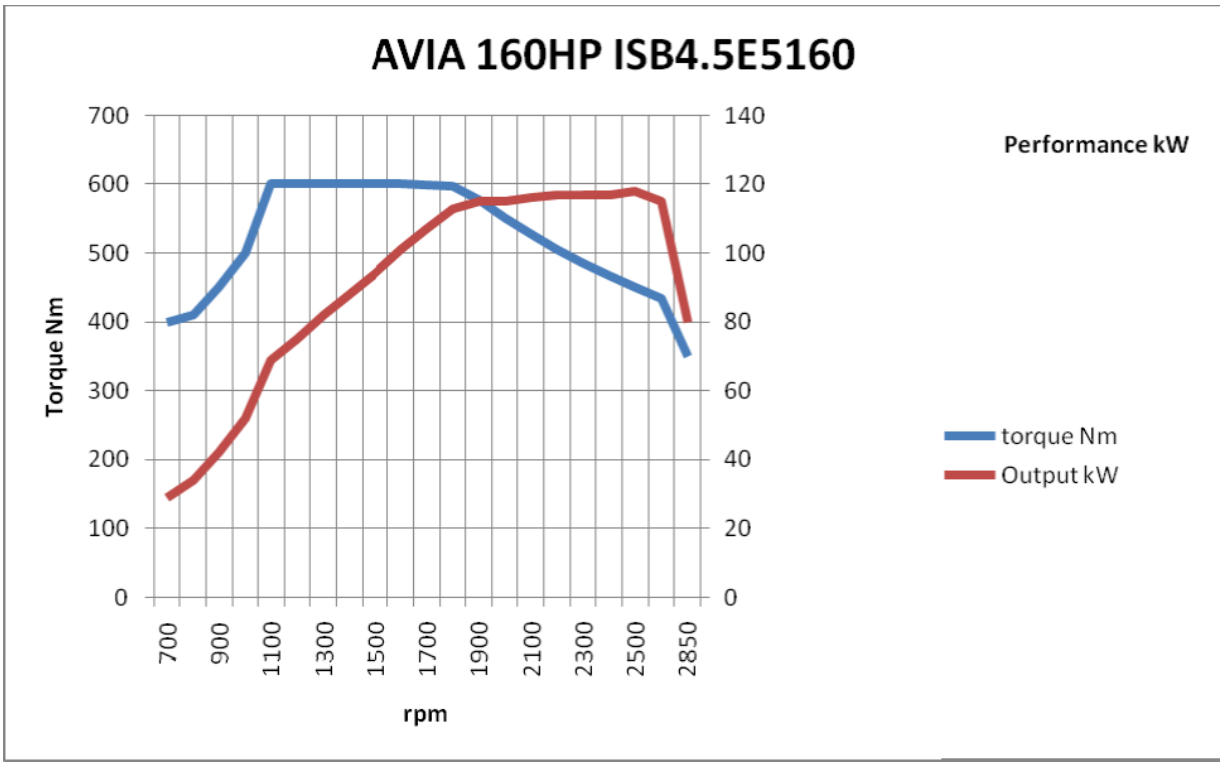
Mounted Cummins engine performs to Euro 5 emission standards by SCR (Selective Catalytic Reduction) system.

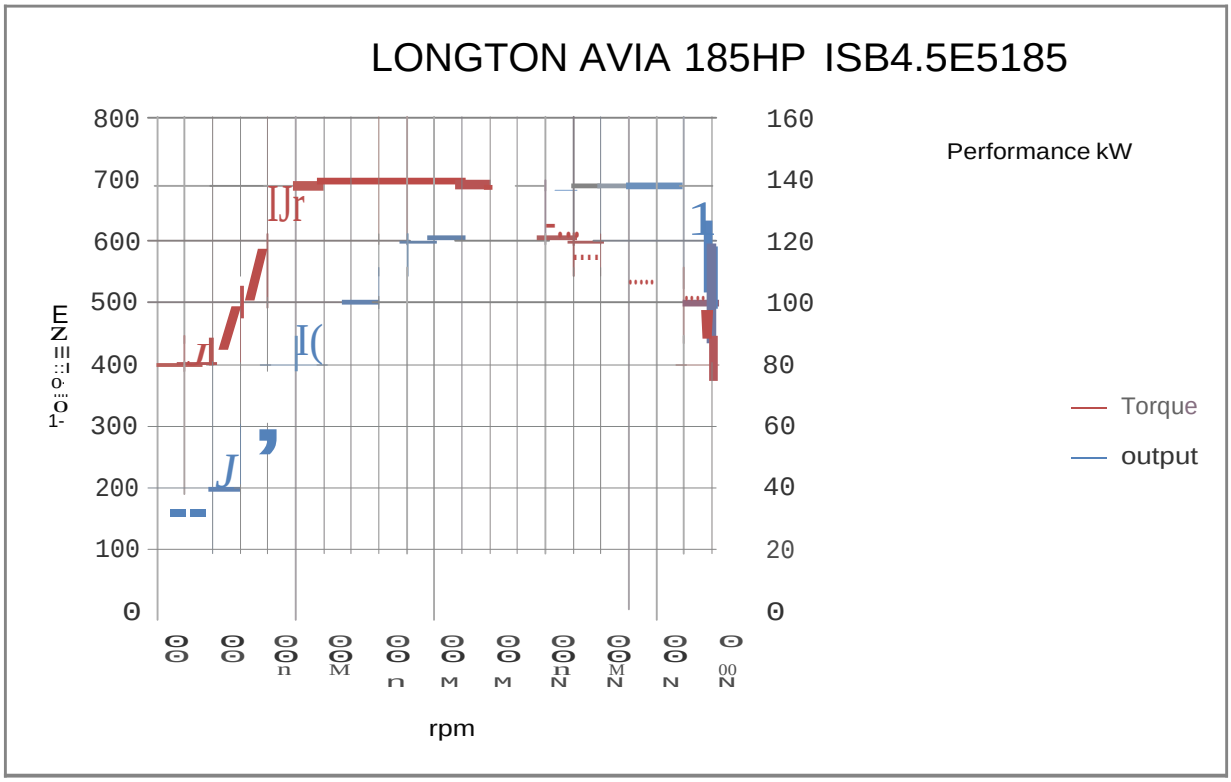
6.2 Engine

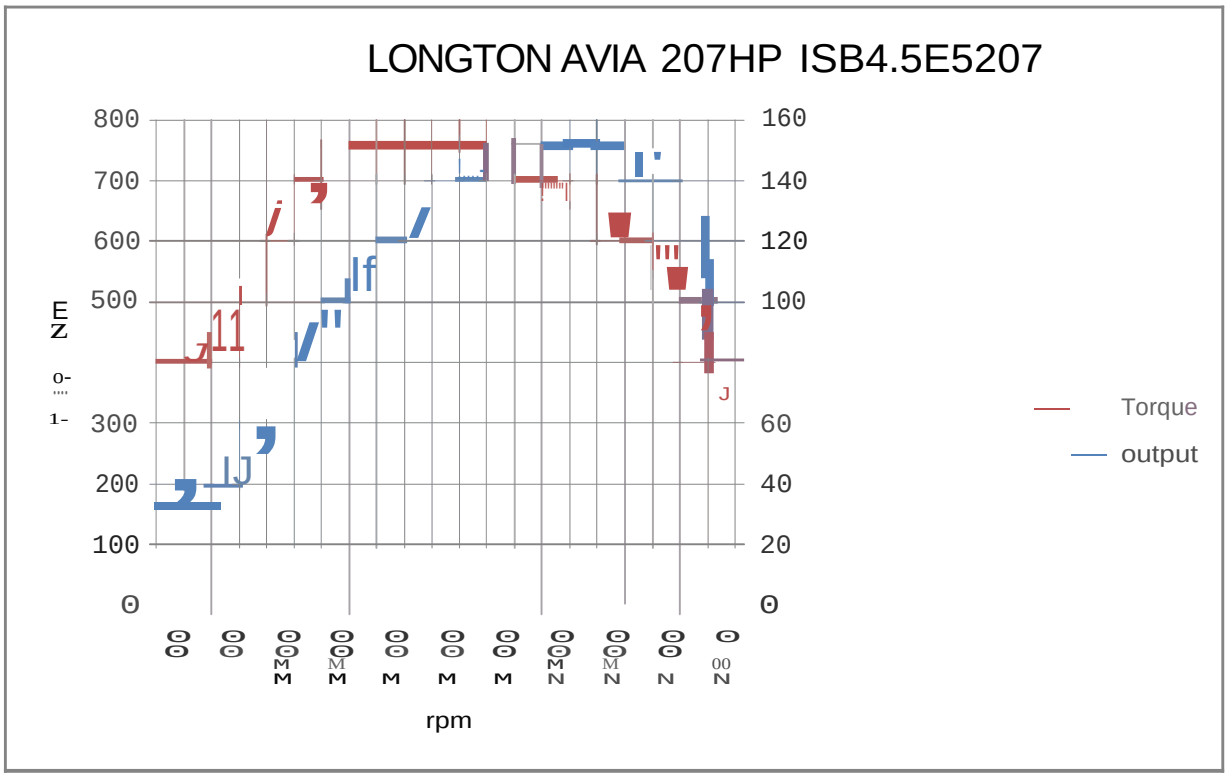
There are 3 possible engine specifications available

Engine			
Type	Cummins ISB4.5E5160	Cummins ISB4.5E5185	ummins ISB4.5E5207
Characteristic	High performance diesel engine, turbocharged with intercooler, co mon rail injection system with full electronic control, EURO5 SCR system - AdBlue tank 30litres		
Cylinders arrangement	4 in row		
Valves	4 for single cylindre		
Volume	4.462 cm3		
barrel x travel	107 x 124 mm		
Max. performance	160 PS (117 kW) at 2500 rpm	185 PS (136 kW) at 2500 rpm	207 PS (152 kW) at 2300 rpm
Max.torque	602 Nm t 1.200 - 1.700 rpm	700 Nm at 1.200 - 1.700 rpm	760 Nm at 1.200 - 1.700 rpm

Courses of power and torque of each engine




LONGTON AVIA 185HP ISB4.5E5185
800
700
600
500
400
300
200
100
0
160
140
120
100
80
60
40
20
0
Performance kW
Torque
output
rpm


LONGTON AVIA 207HP ISB4.5E5207
800
700
600
500
300
200
100
0
160
140
120
100
60
40
20
0
Torque
output
rpm

6.3. Gearbox

We currently offer a 6 speed zf gearbox

Gearbox	6°gear
Type	ZF 6S-850 Ecolite
Case	Aluminium alloy
Oil volume	7,5 litres
1°gear ratio	6,72
2°gear ratio	3,68
3°gear ratio	2,15
4°gear ratio	1,41
5°gear ratio	1,00
6°gear ratio	0,79
Reverse gear ratio	6,03

6.4 Clutch

Single dry plate ZF-SACHS, disc diameter 362 mm, hydraulic operation, air assisted.

Engine	Clutch - maximum transmitted torque at 1.500 rpm
ISB4.E5 160	600 Nm
ISB4.E5 185	700 Nm
ISB4.E5 207	760 Nm

6.5 Propeller shaft

The Fitted propeller shaft is a maintenance free shaft. Construction is with two shaft for WB´s K,N,L
and with three shaft for WB´s S and G.

6.6 Rear axle ratio

Rear axle ratios have essential influence on truck traction (speed, towing performance…) and on fuel consumption!

Axle type	SR 5.14	SR 8.20
Axle ratio	3,73 : 1	3,73 : 1
	4,10 : 1	4,10 : 1
	4,56 : 1	4,56 : 1
	5,13 : 1	5,13 : 1

Recommended rear axle ratio (standard) is 4,10 : 1. This axle ratio is ideal for all countries where maximum speed limit for trucks is 85 km/h. In cases where the customer needs a maximum speed limit of higher than 85km/h it is possible choose ratio 3,73 : 1. Ratio´s 4,56 and 5,13 are for off road, heavy duty, driving with maximum cross combination weight (with trailer) or for applications where low speed is necessary (road sweeper etc.). With the last two ratio´s truck's thus have a lower maximum speed than others.

D75

Gradability (tyres 215/75 R17,5 ")				
	Maximal teoretic gradability in % *			
Rear axle ratio	3,73 : 1	4,10 : 1	4,56 : 1	5,13 : 1
Engine 185 PS (160 PS, 207 PS)	52,5	59,5	69,5	84

* real maximum gradability is approx. 30% is in according of grip

Speeds (tyres 215/75 R17,5 ")				
	Rear axle ratio			
Speed in km/h	3,73 : 1	4,10 : 1	4,56 : 1	5,13 : 1
1°gear at 1.000 rpm	5,7	5,2	4,6	4
6°gear at 2.500 rpm	119	108	97,5	87

Engine rotations at 85km/h (tyres 215/75 R17,5 ")				
Rear axle ratio	3,73 : 1	4,10 : 1	4,56 : 1	5,13 : 1
Engine rpm	1785	1963	2183	2456

D90

Gradability (tyres 215/75 R17,5 ")				
	Maximal teoretic gradability in % *			
Rear axle ratio	3,73 : 1	4,10 : 1	4,56 : 1	5,13 : 1
Engine 185 PS (160 PS, 207 PS)	41,6	47	53,5	63

* real maximum grad ability is aprox. 30% is in according of grip

Speeds (tyres 215/75 R17,5 ")				
	Rear axle ratio			
Speed in km/h	3,73 : 1	4,10 : 1	4,56 : 1	5,13 : 1
1°gear at 1.000 rpm	5,7	5,2	4,6	4
6°gear at 2.500 rpm	119	108	97,5	87

Engine rotations at 85km/h (tyres 215/75 R17,5 ")				
Rear axle ratio	3,73 : 1	4,10 : 1	4,56 : 1	5,13 : 1
Engine rpm	1785	1963	2183	2456

D120

Gradability (tyres 245/70 R17,5 ")				
	Maximal teoretic gradability in % *			
Rear axle ratio	3,73 : 1	4,10 : 1	4,56 : 1	5,13 : 1
Engine 185 PS (160 PS, 207 PS)	29	32,5	36,6	42

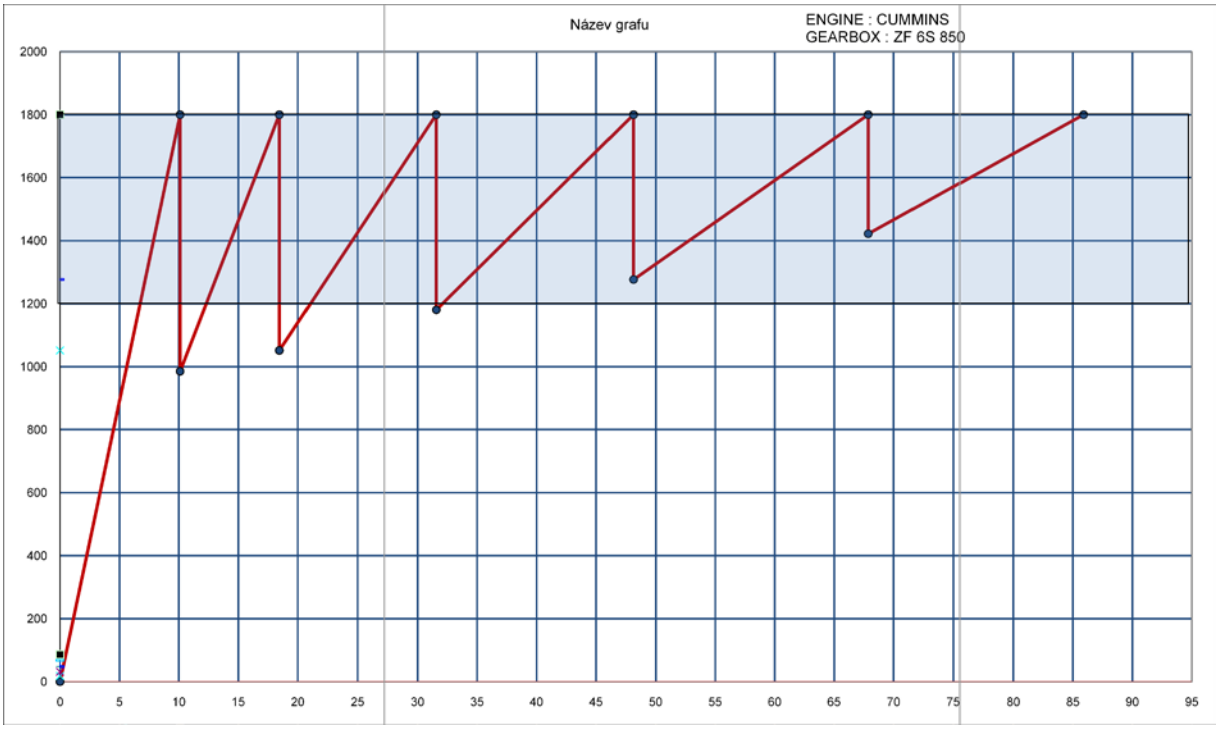
* real maximum gradability is approx. 30% is in according of grip

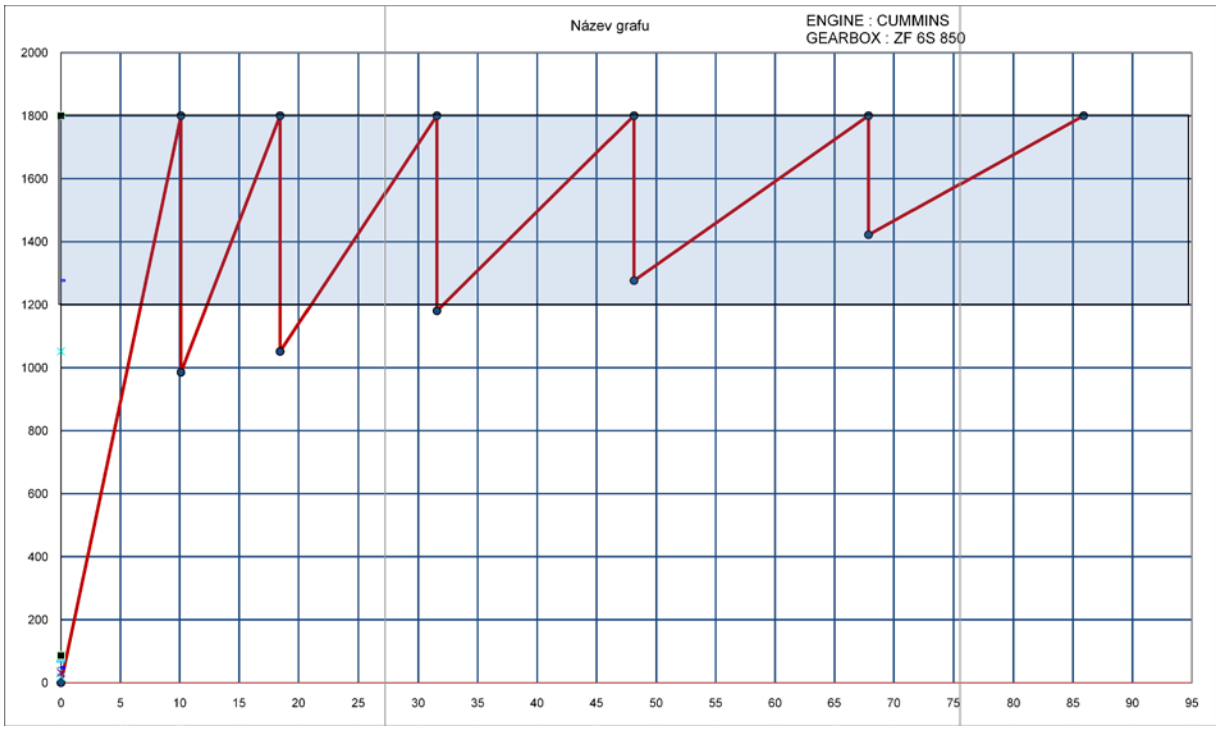
Speeds (tyres 245/70 R17,5 ")				
	Rear axle ratio			
Speed in km/h	3,73 : 1	4,10 : 1	4,56 : 1	5,13 : 1
1°gear at 1.000 rpm	5,7	5,6	5	4,4
6°gear at 2.500 rpm	120	110	99,5	88,5

Engine rotations at 85km/h (tyres 245/70 R17,5 ")				
Rear axle ratio	3,73 : 1	4,10 : 1	4,56 : 1	5,13 : 1
Engine rpm	1748	1921	2137	2404

Cut diagram for 245/70 R17,5 rear axle ratio 4,10

Cut diagram for 245/70 R19,5 rear axle ratio 4,10





6.7 Driveline parameters

The theoretical speed for optimal engine economy is between (1,300 & 2,500 rpm):
These values are approximate and are based on theoretical tyre rolling radius for the full load of tyres to the specified inflation pressure and wear grooves. The exact speed is inversely proportional to the actual load. Empty vehicles will have higher actual speeds. Vehicle speed is limited by the factory according to the applicable legal requirements.

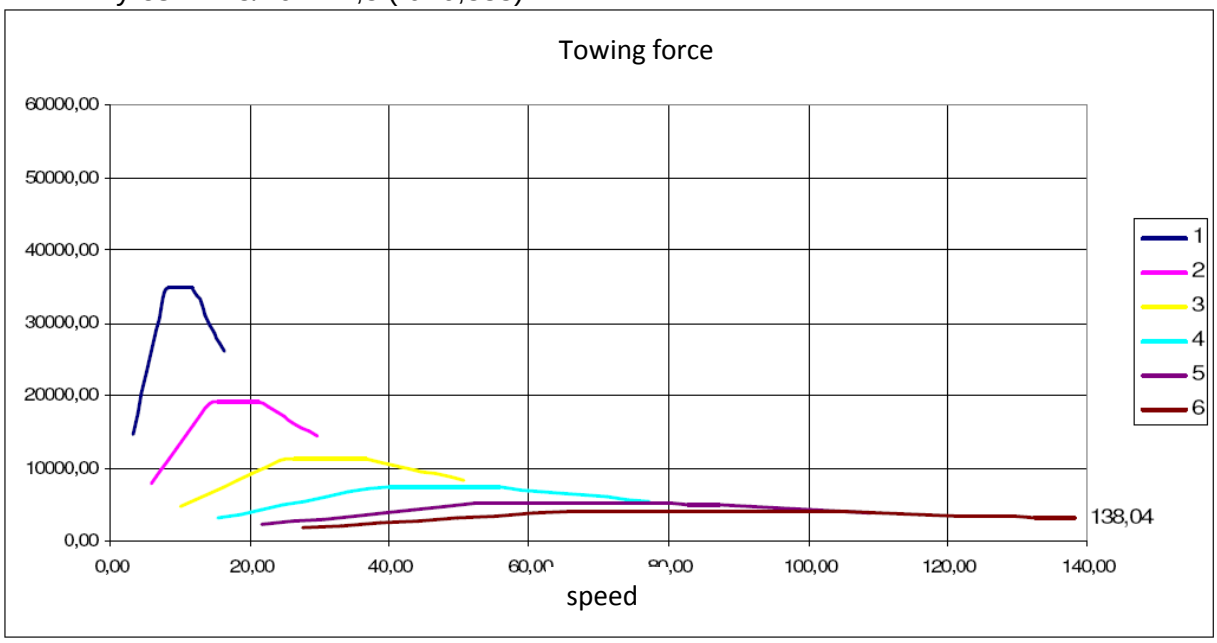
Rear axle ratio	Tyre dimension	Engine rotation 1.300 rpm ZF 6S850 Ecolite 1° gear 6,72	6° gear 0,79	Revers e gear
3,73	205/75 R17,5	7,1	60,7	8,0
	215/75 R17,5	7,3	61,9	8,1
	225/75 R17,5	7,4	63,2	8,3
	9,5 R 17,5	8,0	68,0	8,9
	235/75 R17,5	7,6	64,4	8,4
	10 R17,5	8,2	69,4	9,1
	245/70 R17,5	7,5	63,7	8,3
	245/70 R19,5	8,0	67,7	8,9
	265/70 R19,5	8,2	70,0	9,2
4,10	205/75 R17,5	6,5	55,2	7,2
	215/75 R17,5	6,6	56,3	7,4
	225/75 R17,5	6,8	57,5	7,5
	9,5 R 17,5	7,3	61,9	8,1
	235/75 R17,5	6,9	58,6	7,7
	10 R17,5	7,4	63,1	8,3
	245/70 R17,5	6,8	57,9	7,6
	245/70 R19,5	7,2	61,6	8,1
	265/70 R19,5	7,5	63,7	8,3
4,56	205/75 R17,5	5,8	49,7	6,5
	215/75 R17,5	5,9	50,6	6,6
	225/75 R17,5	6,1	51,7	6,8
	9,5 R 17,5	6,5	55,6	7,3
	235/75 R17,5	6,2	52,6	6,9
	10 R17,5	6,7	56,7	7,4
	245/70 R17,5	6,1	52,1	6,8
	245/70 R19,5	6,5	55,4	7,3
	265/70 R19,5	6,7	57,3	7,5
5,13	205/75 R17,5	5,2	44,1	5,8
	215/75 R17,5	5,3	45,0	5,9
	225/75 R17,5	5,4	46,0	6,0
	9,5 R 17,5	5,8	49,5	6,5
	235/75 R17,5	5,5	46,8	6,1
	10 R17,5	5,9	50,4	6,6
	245/70 R17,5	5,4	46,3	6,1
	245/70 R19,5	5,8	49,2	6,4
	265/70 R19,5	6,0	50,9	6,7

Rear axle ratio	Tyre dimension	Engine rotation 2.500 ZF 6S850 Ecolite 1° gear 6,72	6° gear 0,79	Reverse gear
3,73	205/75 R17,5	13,7	116,7	15,3
	215/75 R17,5	14,0	119,0	15,6
	225/75 R17,5	14,3	121,5	15,9
	9,5 R 17,5	15,4	130,8	17,1
	235/75 R17,5	14,6	123,8	16,2
	10 R17,5	15,7	133,4	17,5
	245/70 R17,5	14,4	122,5	16,0
	245/70 R19,5	15,3	130,2	17,1
	265/70 R19,5	15,8	134,6	17,6
4,10	205/75 R17,5	12,5	106,2	13,9
	215/75 R17,5	12,7	108,2	14,2
	225/75 R17,5	13,0	110,6	14,5
	9,5 R 17,5	14,0	119,0	15,6
	235/75 R17,5	13,2	112,6	14,8
	10 R17,5	14,3	121,3	15,9
	245/70 R17,5	13,1	111,4	14,6
	245/70 R19,5	13,9	118,4	15,5
	265/70 R19,5	14,4	122,5	16,0
4,56	205/75 R17,5	11,2	95,5	12,5
	215/75 R17,5	11,4	97,3	12,8
	225/75 R17,5	11,7	99,4	13,0
	9,5 R 17,5	12,6	107,0	14,0
	235/75 R17,5	11,9	101,2	13,3
	10 R17,5	12,8	109,1	14,3
	245/70 R17,5	11,8	100,2	13,1
	245/70 R19,5	12,5	106,5	13,9
	265/70 R19,5	12,9	110,1	14,4
5,13	205/75 R17,5	10,0	84,9	11,1
	215/75 R17,5	10,2	86,5	11,3
	225/75 R17,5	10,4	88,4	11,6
	9,5 R 17,5	11,2	95,1	12,5
	235/75 R17,5	10,6	90,0	11,8
	10 R17,5	11,4	97,0	12,7
	245/70 R17,5	10,5	89,1	11,7
	245/70 R19,5	11,1	94,6	12,4
	265/70 R19,5	11,5	97,9	12,8

6.8 Towing force

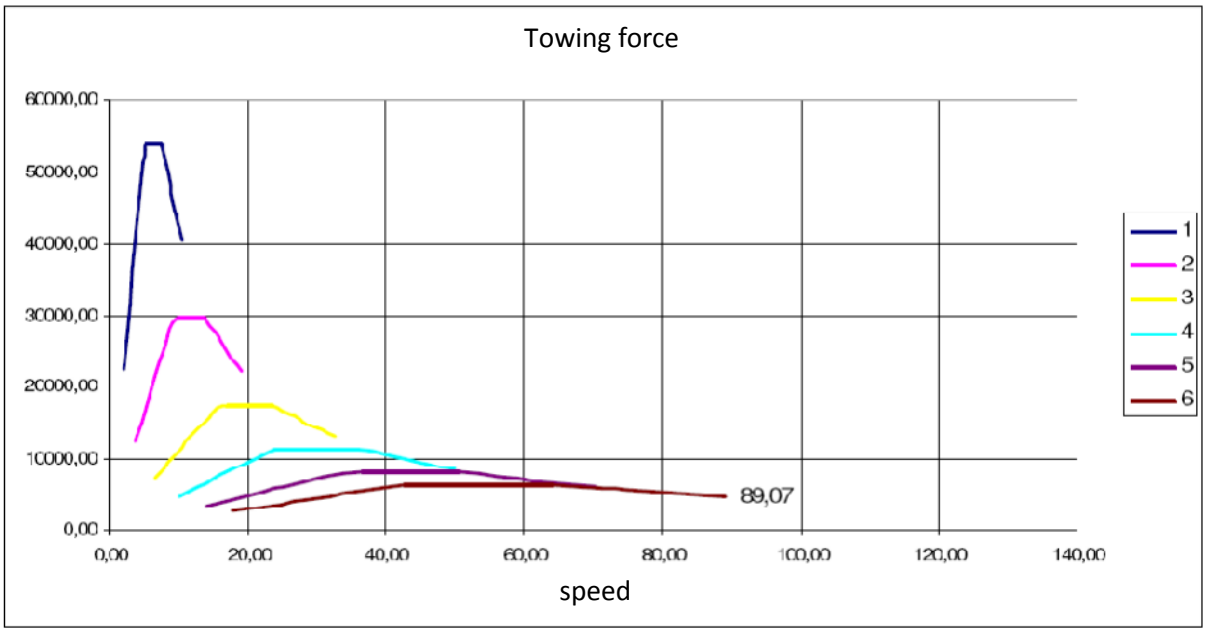
Driveline specification:

Engine – 117 kW (revs 500 – 2500 min-1)
Gearbox – 6S 850
Rear axle ratio – **3,31**
Tyres – 245/70 R17,5 (rd=0,383)



Driveline specification:

Engine – 117 kW (revs 500 – 2500 min-1)
Gearbox – 6S 850
Rear axle ratio – **5,13**
Tyres – 245/70 R17,5 (rd=0,383)



7 Chassis

7 Chassis

7.1 Chassis dimensions
7.2 Chassis design
7.3 Recommended length of superstructure
7.4 Recommended superstructure length in according of EUP dimensions
7.5 FUP and RUP
7.6 Spare wheel and spare wheel carrier
7.7 Wheel chock
7.8 Fuel tank
7.9 AdBlue tank
7.10 Chassis illumination

ATK: For actual possibilities use valid specification in Konfigurator.

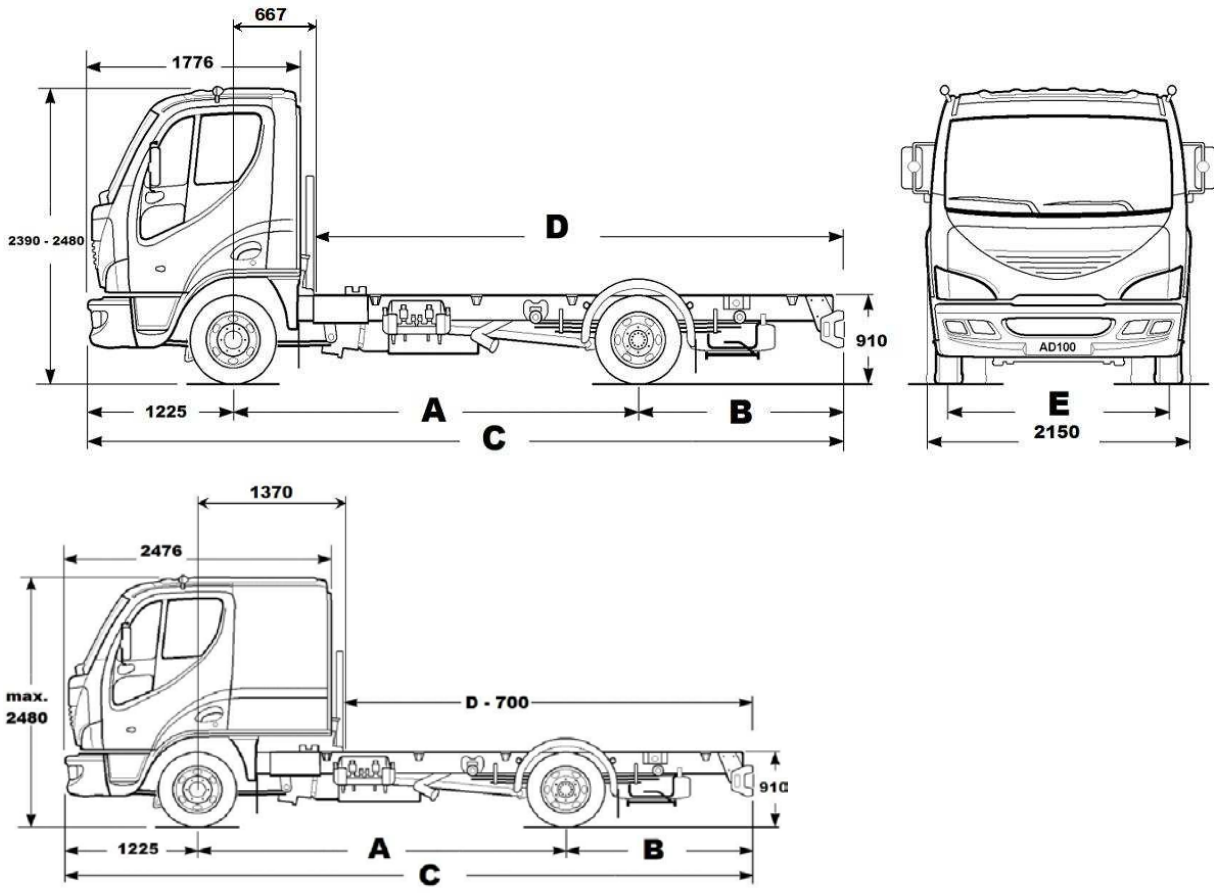
7.1 Chassis dimensions

See on pict.1

LONGTON AVIA D75 - Major dimensions							
WB	A	B	C	D	E	F	D - 700
K	2 950	1 415	5 590	2 280	1849	1736	1 580
N	3 400	1 415	6 040	2 730			2 030
L	3 900	1 670	6 795	3 230			2 530
E	4 500	2 070	7 795	3 830			3 130
S	5 100	2 470	8 795	4 430			3 730

LONGTON AVIA D90 - Major dimensions							
WB	A	B	C	D	E	F	D - 700
K	2 950	1 415	5 590	2 280	1849	1736	1 580
N	3 400	1 415	6 040	2 730			2 030
L	3 900	1 670	6 795	3 230			2 530
E	4 500	2 070	7 795	3 830			3 130
S	5 100	2 470	8 795	4 430			3 730

LONGTON AVIA D120 - Major dimensions							
WB	A	B	C	D	E	F	D - 700
N	3 400	1 365	5 990	2 730	1845	1740	2 030
L	3 900	1 620	6 745	3 230			2 530
E	4 500	2 020	7 745	3 830			3 130
S	5 100	2 420	8 745	4 430			3 730
G	5 600	2 520	9 345	4 930			4 230



7.2 Chassis design

In accordance with GVW and WB, chassis are delivered in one of two possible variants.

Side member profile (mm)			
Type	D60, D75, D80, D85, D90	D100	D110, D120
K - 2950	200 x 60 x 5	-	-
N - 3 400	200 x 60 x 5	200 x 60 x 5	203 x 62 x 6,5
L - 3 900	200 x 60 x 5	200 x 60 x 5	203 x 62 x 6,5
E - 4 500	200 x 60 x 5	203 x 62 x 6,5	203 x 62 x 6,5
S - 5 100	203 x 62 x 6,5	203 x 62 x 6,5	203 x 62 x 6,5
G - 5 600	-	-	203 x 62 x 6,5

Outside frame width - superstructure frame dimension (width in mm)	
200 x 60 x 5	850
203 x 62 x 6,5	853

7.3 Recommended length of superstructure

Recommended length of superstructure: describing optimal superstructure dimensions, in accordance with equal axle load. Selection of this superstructure length warrants equal axle load. Maintaining the axle loads are in proportion to their maximum load capacity.

Type	D60, D75, D80, D85, D90	D100	D110, D120
K - 2 950	3 800	-	-
N - 3 400	4 250	4 250	4 100
L - 3 900	5 100	5 100	4 900
E - 4 500	6 100	6 100	5 900
S - 5 100	7 100	7 100	6 900
G - 5 600	-	-	7 700

mm

Dimensions are valid only for Day Cab!!!

When using a superstructure with an uneven distribution of mass or weight in the middle of the body, it is necessary to choose the position of the body so as not to load a vehicle to exceed permissible axle load! Maximum, legislatively authorised, body rear overhang behind the rear axle is 3 500 mm and length of rear overhang cannot be more than 1/3 of total vehicle length!
The maximum usable length of the superstructure at the maximum length of the rear overhang 3 500 mm:

Type	All types
K - 2 950	5 780
N - 3 400	6 230
L - 3 900	6 730
E - 4 500	7 330
S - 5 100	7 930
G - 5 600	8 430

mm

Dimensions are valid only for Day Cab versions!!!

7.4 Recommended superstructure length in according of EUP dimensions

EUP - 1.200 x 800 mm			
Quantity	purely theoretical length in mm mm	inside length of superstructure in typical dropside body in mm	purely theoretical outside length of
1	800	800	
2	800	800	
3	1 200	1 200	
4	1 600	1 600	
5	2 000	2 000	
6	2 400	2 400	
7	2 800	2 850	
8	3 200	3 250	
9	3 600	3 650	3 800
10	4 000	4 050	4 200
11	4 400	4 450	4 600
12	4 800	4 900	5 000
13	5 200	5 300	5 400
14	5 600	5 700	5 800
15	6 000	6 100	6 200
16	6 400	6 500	6 600
17	6 800	6 900	7 000
18	7 200	7 400	7 520

Possible loading:

Unpair:

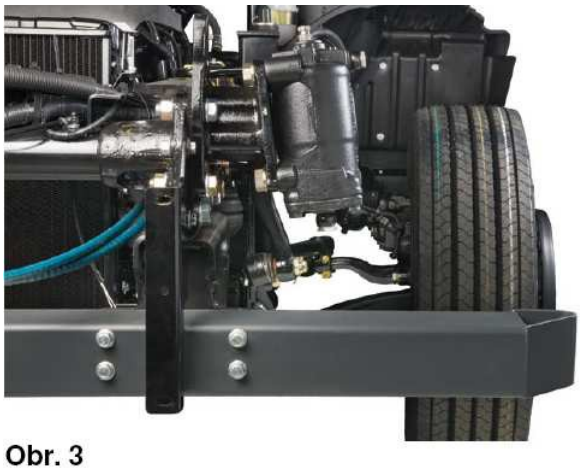
1	2	3
4	5	
6	7	
8	9	
10	11	
12	13	
14	15	
16	17	
18	19	
20	21	
22	23	

Pair:

1	2
3	4
5	6
7	8
9	10
11	12
13	14
15	16
17	18
19	20
21	22
23	24

7.5 FUP and RUP

FUP – Front underrun protection
For vehicles with Gross Vehicle Weight above 7,5 tones legislation requires the front underrun protection. This protection is the beam, which is located under the front plastic bumper (pict.3).



Obr. 3

Obr. 4

RUP – Rear underrun protection
LONGTON AVIA on all chassis adds a rear bumper (pict.4) which complies with the bumper brackets need approval. Into the rear bumper are integrated all associated lights, side turn signals and license plate lights. When using devices operating in the rear bumper (tailift, coupling, etc.) is appropriate to order a vehicle without a rear bumper.

7.6 Spare wheel and spare wheel carrier

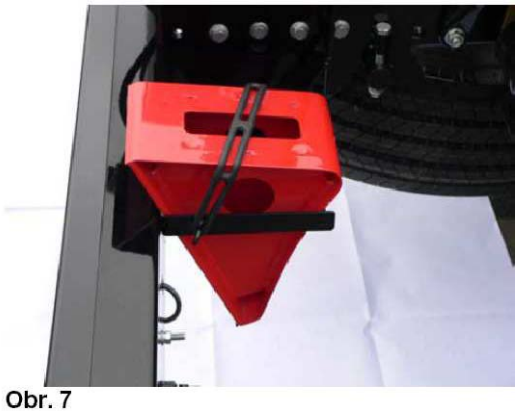
Position of spare wheel carrier is in according of choosing WB (pict5&6). Spare wheel carrier is equipped with a trigger roller for easier handling of a spare wheel. Ordering of spare wheel without spare wheel carrier (not fitted onto chassis) is appropriate in cases where it is better or necessary to fix the spare wheel on the superstructure.

Obr. 5

Obr. 6

7.7. Wheel chock

All LONGTON AVIA trucks are equipped with a wheel chock. Its location depends on the WB.



Obr. 7

7.8 Fuel tank

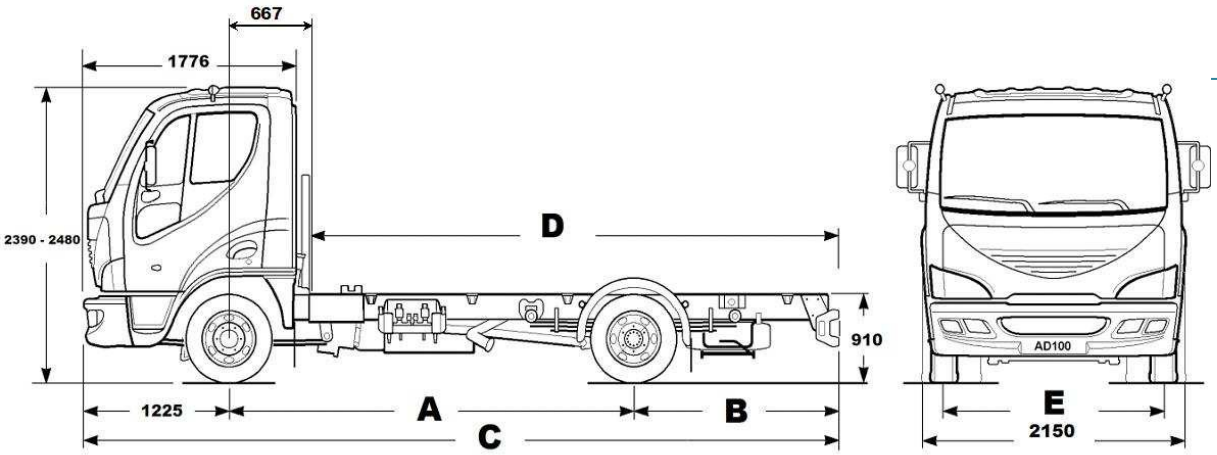
LONGTON AVIA chassis can be equipped with tanks with a capacity of 120 litres (pict. 8) or 200 l (pict.9).
200 l tank cannot be used with 2950 mm and 3400 mm wheelbase, in combination with sleeper cab.

Obr. 8

Obr. 9

7.9 AdBlue tank

Euro 5 vehicles in addition to the fuel tank are equipped with a plastic tank for AdBlue. AdBlue is the trade name for pure urea solution for the automotive industry. Usable AdBlue tank capacity is 30 litres. To protect against frost the urea tank together with the intakes for urea are heated by water from the engine cooling system.


667
1776
2390 - 2480
D
910
AD100
1225
A
B
C
E
2150

8 Cab

8 Cab
- 8.1 Cab types
- 8.2 Roof spoiler and side fenders
- 8.3 Rear windows
- 8.4 Cab locking
- 8.5 Side windows operating
- 8.6 Mirrors operating and combination
- 8.7 External lighting
- 8.8 Interior lighting
- 8.9 Speedometer
- 8.10 Cruise control
- 8.11 Tachograph
- 8.12 Seats and bunk
- 8.13 Air conditioning
- 8.14 Independent heating
- 8.15 Tuner + CD player
- 8.16 Digital hours
- 8.17 Labels
- 8.18 Next standard cab equipment

ATK: For actual possibilities use valid specification in Konfigurator

All steel, forward control, two door cab with hydraulic tilt. Width – 2,200mm across wings.

Widespread use of double zinc coated pressed steel panels and wax injected cavities. Plastic cladding panels on front. Noise and thermal insulation. Front mounting points on rubber bushes. Two point rear cab suspension system with coil springs and hydraulic shock absorbers and automatic hydraulic lock-down device

8.1 Cab types

Day Cab (pict.1), Sleeper Cab (pict.2)

Obr. 1

Obr. 2

8.2 Roof spoiler and side fenders

Available (not included in the konfigurator) special request. Need to recognise potential problems with transport (especially when spoiler is mounted). Of course possible use of homologated spoilers and fenders from local manufacturers is possible.

8.3 Rear windows

The standard day cab has three rear windows for a better rear view, for superstructures which need or permit this view. It is possible on special request to order a Day cab without windows.

8.4 Cab locking

Standard locking is mechanical and central locking as a option. For both variants 2 keys are provided.

8.5 Side windows operating

Standard is mechanical operation, as an option electric control (on driver side with operation of both windows).

8.6 Mirrors operating and combination

It is possible to choose between manual and electric control of the main mirror. Control is through a switch located on the centre console (pict.3)

Obr. 3

Obr. 4

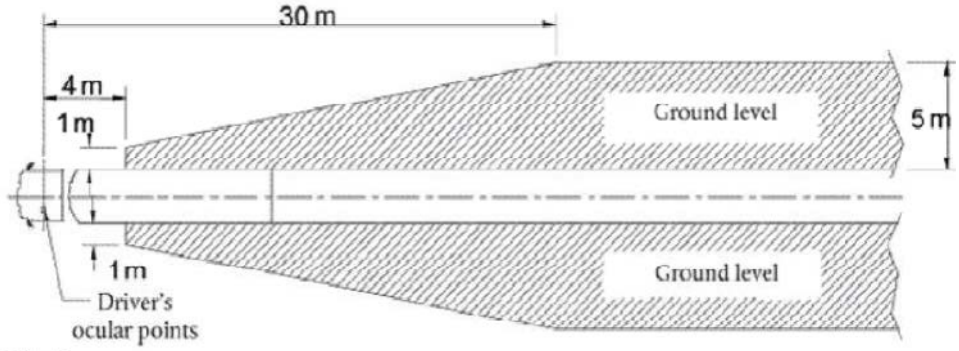
The main exterior mirrors are heated as standard for removing ice. Heated mirrors are activated by a switch on the dashboard (pict.4).

On the basis of legislative requirements, LONGTON AVIA are equipped with the following sets of mirrors:

	Valid for trucks		Main mirror		wideangle blindspot mirror		kerb mirror	Front blindspot mirror
	till 7,5t	7,51 - 12t	left	right	left	right	right	right
4 mirrors	●		●	●	●	●		
5 mirrors	●		●	●	●	●	●	
6 mirrors	●	●	●	●	●	●	●	●

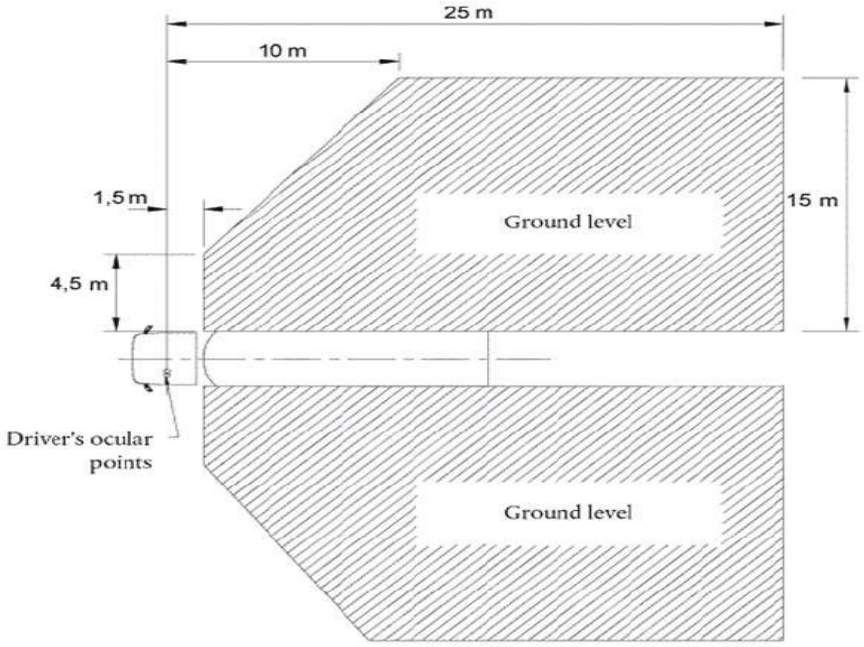
In according 2003/97/EC and latest 2005/27/EC

Main mirrors:



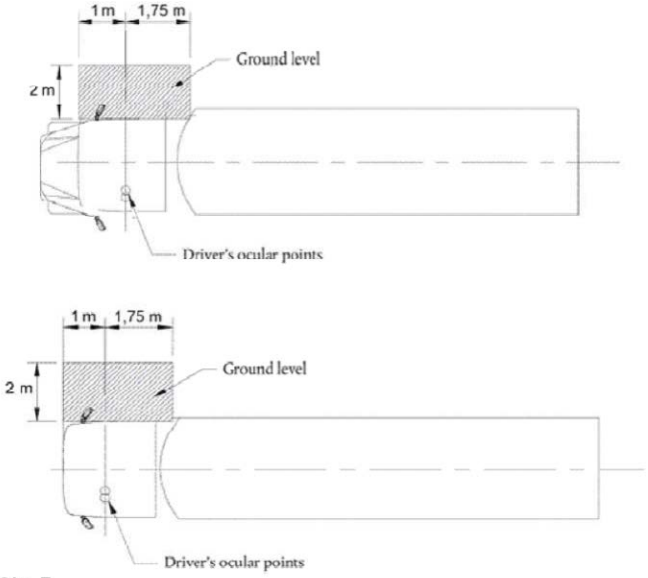
Obr. 5

Wide-angle (blind spot, panoramic) mirror:



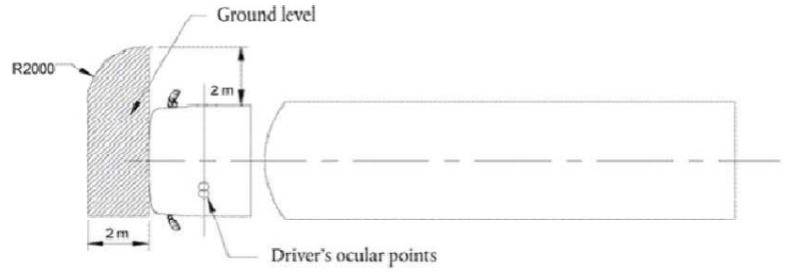
Obr. 6

Kerb mirror:



Obr. 7

Front blind spot mirror:



Obr. 8

8.7 Exterior lighting

Obr. 9

Obr. 10

Headlamps –dipped, long-distance and position (parking) lights, headlamp levelling is a standard option and is mandatory for chassis with parabolic leaf springs on the rear axle suspension. For air suspension on rear axle headlamp levelling is not necessary. Levelling set is dependent on the distribution and extent of the load and the wheelbase – operating is in owner´s manual.

Turn light - are located immediately next to the main headlamps. In the case of specifying the "narrow" body (2.150-2.350mm) these are the main direction of light supplemented with directional lights on the cab doors. In the case of the choice "wide" body (2.350-2.600mm) these turn signals replace the stickers with the emblem of LONGTON AVIA and the corresponding turn signals must then be placed on the front edge of the superstructure.

Fog lamps – are fitted in front bumper, instead covers which are fitted when fog lamps are not required

Roof marker lights - all vehicles are equipped marker lights on the cab roof (pict.10)

8.8 Interior lighting

Obr. 11

8.9. Speedometer

Speedometers are supplied with a dual scale in km/h and mph

pict.12

8.10. Cruise control

Cruise control is via three buttons on the centre console, dashboard (pict.12) the middle button to activate the control vehicle speed, engine idle speed when a PTO is mounted, through this two adjustment buttons **+** and **- .** Buttons **+** and **-** then used for storage, retrieval and control the desired speed, or rpm. Detailed description of the cruise control is in the owner´s manual.

7.11 Tachograph

According to valid legislation from 1.5.2006, all vehicles over 3.500 kg must be equipped with a digital tachograph. The digital tachograph is located in one of the two ISO holes in the centre console above the windscreen. The second hole can be used to install additional equipment - such as radio, CD Player etc. Vehicles are supplied with a digital tachograph Stoneridge SE5000 (pict.13) and VDO DTCO 1381 as a option.

Obr. 13

Obr. 14

Vehicles are supplied with speakers in the doors(pict.14)

7.12 Seats and bunk

Supplied seats are air-suspended driver seat and double seat for passengers (Day cab).
In the case of sleeper cab there is a fitted lower bunk with bed storage space and two air-suspended seats. For air-suspended seats it is possible to adjust the:

- Inclination angle
- Seat tilt-adjustable height-adjustable front part and rear part of seat
- Adjustable seat position in the longitudinal direction
- Adjustable height of headrest

7.13 Air conditioning

Optional. You can have a vehicle with air-conditioning; air conditioning only works when you are running the engine and ventilation. Air conditioning is activated by the button on the centre console, dashboard

8.14 Independent heating

Unavailable at this present time.

8.15 Tuner + CD player

Vehicles are supplied with the preparation for installing the selected radio or other communication device with standard size radio. Preparing for installation means a hole to install the plug (pict.13), cabling, speakers at the door (pict.14) and a roof antenna.
So you buy the truck and have to buy a radio separately?

8.16 Digital clock

As a option it is possible to supply a vehicle with a digital clock. The location is next to the heater controls on the centre console, dash caps in place. Controlling the digital clock is described in the owner´s manual.

8.17 Labels

The labels cab (pict.15, 16), see especially the following information:

- Truck type
- Gross Vehicle Weight
- Combination Vehicle Weight
- Axle loads
- Information about setting up a load controller
- Recommended inflation pressure tyres for front and rear axle
- Homologation label with a list of selected major approvals

Obr. 15

Obr. 16

8.18 standard cab equipment

Other equipment, which comes standard, is:

Adjustable tilt steering column - steering wheel positioning
Height adjustable seat belt (pict.17) Switch for
internal/external air circulation Storage pocket
behind the seat (pict.18) Storage space under
the dual passenger seat

Obr. 17

Obr. 18

9 Colours

9 Colours

9.1 Cab colour
9.2 Front mask colour
9.3 Front bumper colour

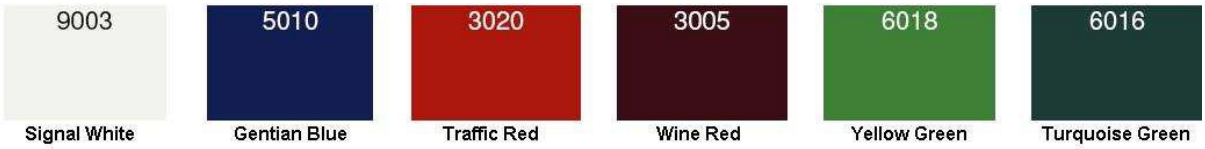
ATK: For actual possibilities use valid specification in Konfigurator

9.1 Cab colour

Cabins can be supplied in a variety of colours: Standard LONGTON AVIA colours

- shades: RAL9003, 5010, 3020, 3005, 6018 a 6016
Standard colour RAL - shades according to RAL colour swatch
Special and Metallic paint - mixed shades supplied by the sample colour and metallic paint

Standard LONGTON AVIA **colour**s:



9.2 Front mask colour

Colour mask can be
selected: Mask in cab colour or black

9.3 Front bumper colour

Bumper in cab colour or black

10 Usability & Superstructure

10 Usability & Superstructure
10.1 ADR application - informative
10.2 PTO (power take off)
10.3 Superstructure width

ATK: For actual possibilities use valid specification in Konfigurator.

10.1 ADR application

Chassis modifications for the performance of ADR are not offered and LONGTON AVIA cannot prove or confirm the complete performance of the chassis . LONGTON AVIA chassis does not reach EC-ADR safety standards. Safety regulations EC-ADR is based on Directive 98/91/EC valid throughout the European Union.
That provision addresses the comprehensive needs of a particular vehicle, the following technical solutions:

Brakes performance
ABS
Speed limiter
Implementation of drive unit and the exhaust system with a view to influencing the temperature of transported material
Special design or disconnecting the battery isolator with a control cabin
Implementation of power lines, wiring and insulation of battery
Special design tachograph (ADR tachograph)
Incombustibility part cabin temperature resistant enclosure
Fuel tank and fuel lines
Installation of independent heating arrangements in the ADR
Trailer coupling

By the nature of hazardous material transported ADR distinguish the following classes:

ADR Class	Description of the substances shipped
EX / II	Transport of explosive substances in limited quantities - opened or closed superstructures
EX / III	Transport of explosive substances in closed superstructures
FL	Transport flammable liquids with flash point below 61℃ and combustible gas
OX	Transport of chemicals
AT	Transport of other hazardous substances

Each of these classes has different requirements for various technical solutions.

10.2 PTO (power take off)

PTO – clutch independent – engine PTO, flywheel PTO

1. Direct front PTO – powered via propeller shaft which is connected on engine crankshaft
2. Non-direct front PTO – drive auxiliary equipment via additional pulleys and belts.
3. Engine PTO

P.T.O´s are NOT offered in the specification!

PTO´s in some cases are supplied by the bodybuilders, which are able for some applications to fit these types of Power Take Off´s.

PTO – clutch dependent, gearbox PTO

ZF 6S 850 Ecolite pict 1.						
PTO type	Output point	Direction of output rotation	Speed factor	Torque	Continous operation	Connection type
NL/1b	C	opp. to engine	0,53	600	permitted	flange Ø90 mm, 4 holes Ø 8,1 mm
NL/1c	C	opp. to engine	0,53	600	permitted	direct pump connection acc. to ISO 7653
NL/4b	U,R,D	same as engine	0,68	430	max.60 minutes	flange Ø90 mm, 4 holes Ø 8,1 mm
NL/4c	U,R,D	same as engine	0,68	430	max.60 minutes	direct pump connection acc. to ISO 7653
N850/10b *	U	same as engine	1,72 1,27 0,97	290 430 560	permitted	flange Ø90 mm, 4 holes Ø 8,1 mm
N850/10c *	U	same as engine	1,72 1,27 0,97	290 430 560	permitted	direct pump connection acc. to ISO 7653
NL/1 (b&c) mounted on N850/10	C	opp. to engine	0,53	600	permitted	flange Ø90 mm, 4 holes Ø 8,1 mm & direct pump connection acc. to ISO 7653
NL/4 (b&c) mounted on N850/10	R,L	same as engine	0,68	430	max.60 minutes	flange Ø90 mm, 4 holes Ø 8,1 mm & direct pump connection acc. to ISO 7653

* on special request
Speed factor = PTO revs/engine revs
Example: NL/1b,c speed factor 0,53
engine revs 1.000 x 0,53 = 530 revs on PTO output

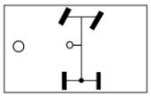
Output points:
C – central position
U – upper position
D – down position
R – right position
L – left position

Obr. 1

NL1/c

N850/10c

PTO control

PTO is controlled by the switch  on the middle of dashboard when the clutch is depressed. PTO revs control (engine revs) is possible by the cruise control buttons on dashboard (see cruise control in chapter 8.10.). Minimal engine idle speed when PTO on are set from production on 850 min^{-1}. Increased speed is set (hold the plus button from cruise control) on 1 200 min^{-1}. Clicking on the buttons of cruise control plus or minus, will gradually change the speed.

10.3 Superstructure width

To meet various legislative requirements for the equipment chassis with respect to the width of the body used LONGTON AVIA offers a wide choice of extensions.
Body width in the range:

(2 000 – 2 150mm) – now not available
2 150 – 2 350 mm
2 350 – 2 600 mm

These choices have an impact on:

size of holder mounted mirrors
width and design of the side protection
fenders width
the application side directional lights on the cab

11 Drawbar application

11 Drawbar application

11.1 GVW of trailer and combination
11.2 Drawbar
11.3 Bolt coupling
11.4 Electric and air connections
11.5 Front coupling
11.6 Dimensional limitations of vehicles and combinations

ATK: For actual possibilities use valid specification in Konfigurator.

Obr. 1

Vehicles with Euro 5 engines can be used in combinations using a trailer with a total weight of 3 500 - 10 000 kg.

Type	Gross Vehicle Weight (in kg)		
	GVW of towing vehicle	GVW of trailer with air brakes	Gross Combination Weight (GCW)
D60	5 990	6 000	12 000
D75	7 490	6 000	12 000
D80	8 000	6 000	14 000
D85	8 490		
D90	9 000	9 000	18 000
D100	10 000	8 000	18 000
D110	11 000	10 000	21 000
D120	11 990	10 000	22 000

Vehicles that are not covered in drawbar application can be coupled with:

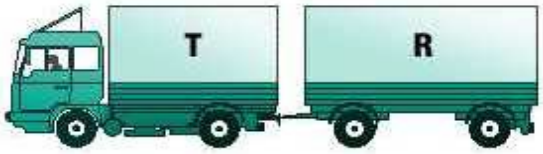
trailer with a total weight exceeding 750 kg
with braked trailer (overrun/inertia brakes) to the total weight of 3.500 kg

11.2 Drawbar

Not available at this present time. Bodybuilders who have approval for conversion to drawbar version can rebuild the chassis to this drawbar application.

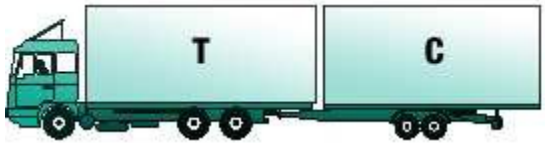
Drawbar versions:

1) Drawbar in rear overhang – typical drawbar for semi-trailer with front steering axle

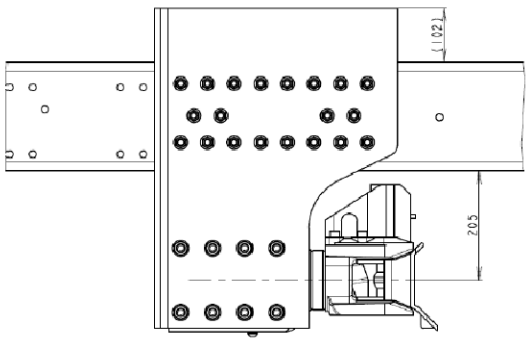


- Well-accessible trailer equipment (easy coupling)
- places no burdens on the main frame of the towing vehicle vertical force
- quieter and more stable driving behaviour
- Smaller payload semi-trailer
- complicated construction of semi-trailer

2) Lower drawbar application (pict.3) – typical drawbar application for centre axle trailer



Centre axle trailer is trailer with 1 or 2 (tandem trailer) or 3 central axles (threedem trailer)
- Easier construction of the central trailer axle
- Large payload trailer
- It uses the frame of the towing vehicle static and dynamic vertical force - stronger sizing drawbar and boltcouplings
- Restrictions on the bottom rung of the position of assembly for towing a trailer
- less access to mount device – possible solve by remote control equipment trailer
- variant with drawbar in the rear overhang is with regard to stability and security kits suitable for use with centre trailer axle(s)! This drawbar position we recommend only be used with semi-trailer.



This complete set is possible ordered from LONGTON AVIA parts or from every Ringfeder dealer.

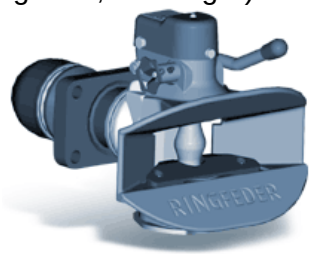
This set consists:

2 side plates
1 drawbar and screws with nuts

It is possible to order the applicable bolt coupling at the same time.

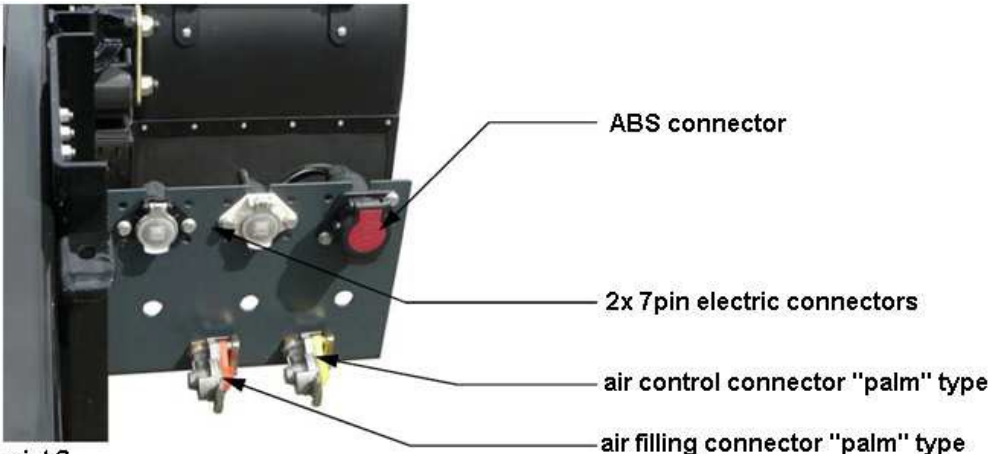
11.3 Bolt coupling

Not available at this present time) but is possible to be ordered from LONGTON AVIA parts or with any supplier of this bolts (Ringfeder, Rockinger).



11.4 Electric and air connections

Most of the trailers (semi-trailers, central axle trailers) have their own power source and are therefore dependent on supplies of energy from the towing truck. An energy source is compressed air and electricity. Compressed air is used mainly for braking trailers and electricity supply to the electrical system and any data communication. The normal configuration of connections for the trailer (pict.3) has 2 x 7pin connector (as option 1x15pin), ABS connector, 2 x air connection. For specialty trailers (tippers, tanks...) are needed to further link (hydraulic, pneumatic, and electric) with a towing vehicle, which is already addressed by specific requirements, together with the customer and bodybuilder.

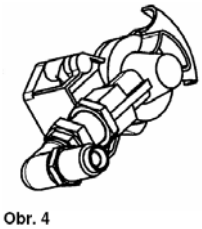


pict.3

Electric connectors:
Vehicles prepared to tow trailers have basically one or two cables - connectors for the trailer lights and a special connector cable ABS. For trailer lights, either two connectors with 7pins (2x7pins contact) (pict.3), or a single connector with 15pins (1x15pins contact). To communicate with the ABS another special connector with 5 pins (pict.3). Due to the great range of customer requirement for placement of electrical connectors on the vehicle to resolve this situation LONGTON AVIA fit as standard?

Air connectors:
Vehicles used to tow trailers are equipped with air connectors
(Fig. 4) for connecting a trailer brake system. two- connectors perform the control and supply of air. Construction of connectors prevents confusion and are colour-coded.

supply connector – red colour
Control connector – yellow colour



Obr. 4

Obr. 5

Due to the great range of customer requirement for pneumatic connectors location on the vehicle to resolve this situation LONGTON AVIA supply a special set that includes the following items:

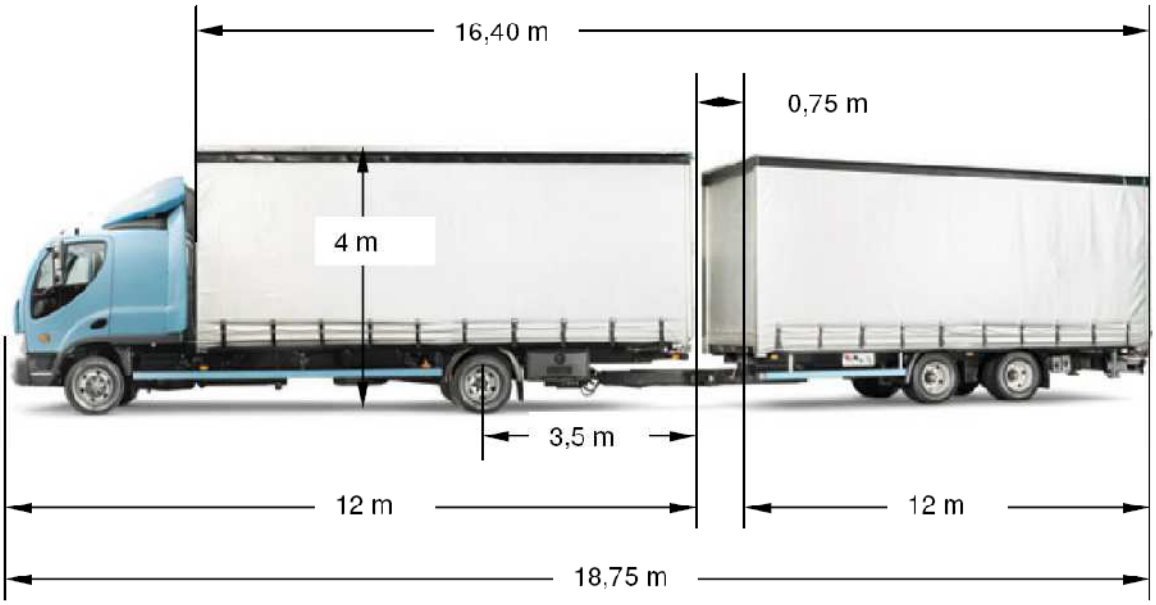
• connectors supply and control line (Fig. 5)
• 2,5 m long hose for supply and control circuit
• head (Fig. 4) for supply and control circuit
• The set comes with the vehicle when ordering option in the Konfigurator “towing equipments –
air and electric connection” and is located in the cab.

11.5 Front coupling

In accordance with applicable regulations, the front suspension for towing at least bear tensile and compressive load equal to half the total weight of the vehicle itself. Hinge suits vehicles LONGTON AVIA tensile and compressive load = 60 kN around 6,000 kg.

11.6 Dimensional limitations of vehicles and combinations

Maximum width of the vehicle - 2,55 m (in the case of isotermic body 2,60 m)



Dimensional and weight limits for motor vehicles, trailers and combinations vary in every country separately but values above are valid in the EC.

12 Electric equipment

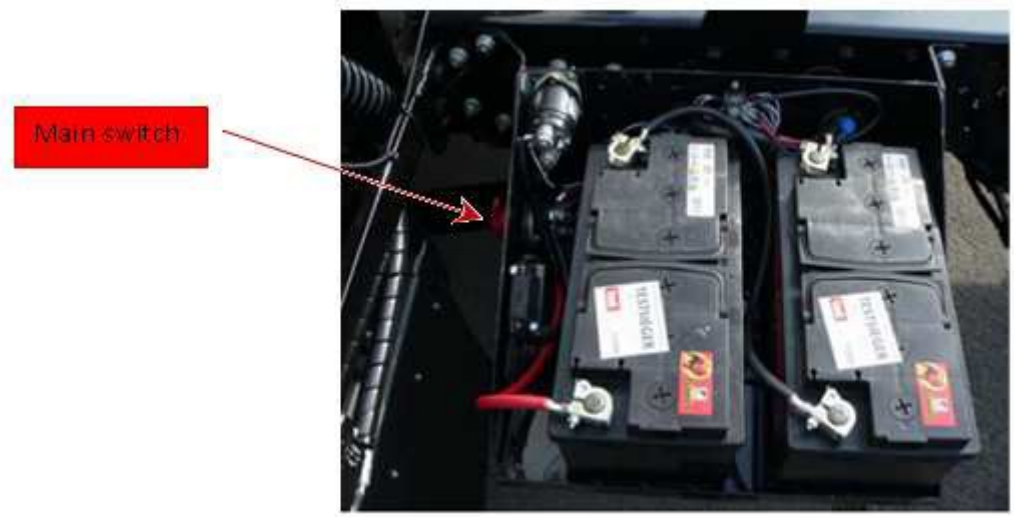
12 Electric equipment
12.1 Wiring
12.2 Battery and main switch
12.3 Converter
12.4 Alternator

ATK: For actual possibilities use valid specification in Konfigurator.

12.1 Wiring

Electrical installation and wiring complies with all applicable regulations on electromagnetic compatibility and interference. In exposed places wiring is protected against damage to heat-resistant protective hose. All connectors on the chassis are waterproof (IP69) selected for communication equipment is used in a single CAN Bus. This bus connects engine control unit, AdBlue pump, ABS unit, digital tachometer, speedometer, and the diagnostic socket. CAN cable for data communication is used on chassis by two insulated wires with bare wire, which has the function of shielding.

12.2 Battery and main switch



Pict.1

As standard vehicles are delivered with two low-maintenance batteries fitted with a capacity of 2 x 88 Ah and voltage of 12V. Both the battery and main switch are placed on a steel bracket on the left side of the chassis directly behind the cab. Battery cover is plastic. For certain applications requiring larger capacity battery (such as electro-hydraulic tail lift) you can select batteries with a capacity of 2 x 140 Ah/12V.The battery dispensing compartment fuse and relay box. This box is installed at the front before the passenger cabin.

12.3 Converter

LONGTON AVIA vehicles use a converter 24V / 12V.
Location of 12V and 24V socket.
• 12V - on the centre console, dashboard on the driver's side.
• 24V - on the centre console, dashboard on the driver's side and on the middle floor console between the seats (in the form of cigarette lighter)

Obr. 3

12.4 Alternator

LONGTON AVIA vehicles are fitted with 24V/80A alternators.

13 Operation & settings

13 Operation & settings
- 13.1 Speed limiter setting
- 13.2 Language of identification sticker
- 13.3 Tachograph calibration
- 13.4 Reverse warning
- 13.5 Ambient temperature
- 13.6 Standard equipment

ATK: For actual possibilities use valid specification in Konfigurator

13.1 Speed limiter setting

Speed of vehicles of categories N2 and N3 (trucks with a total weight over 3500 kg) is limited by law to a maximum speed of 80 km / h. these vehicles must also be equipped with speed limiters. All trucks are equipped with LONGTON AVIA speed limiter. This limiter is factory set to a speed of 89 km/h. Setting of the limiter to 89km/h does not authorise the operator to exceed the speed of 80 km/h!
Speed limits may differ in different countries and therefore it is possible to override the speed limiter according to the vehicle owner. In countries where the permitted speed is higher than 85 km/h is recommended to choose a rear axle ratio 3.73 due to lower consumption at maximum speed (see chapter 6.6).

13.2 Language of identification sticker

By country of destination labels and signs can be supplied in several languages. The labels give basic information about the type, weight, load, setup and basic approvals.

Obr. 15

Obr. 16

13.3 Tachograph calibration

Every vehicle has a factory preset in the digital tachograph containing technical information about the vehicle. On the production line the following is also carried out commissioning of the digital tachograph. For proper function the digital tachograph is required to be regularly calibrated. tachograph calibration is to be carried out only by an authorised centre!

13.4 Reverse warning

To improve safety when reversing vehicles can be equipped with an optional audible warning when the vehicle is reversing.

13.5 Ambient temperature

Used fluids allow the use of vehicles in the temperature range 33 °C + / - 27 °C

13.6 Standard equipment

Mandatory equipment:
Each vehicle is supplied with mandatory equipment, which complies with current legislation and includes:
• warning triangle
• First aid kit - kits content complies with applicable regulations
• A set of bulbs - bulbs kit meets the applicable regulations

Tool set:
Vehicles are also supplied with a set of tools that includes:
• Hydraulic jack (5 tons for the D75-D100, 7t for D120)
• tilt cab locks
• cab tilt bar
• wheel brace
• Double-sided key no.24 and č.30
• 2 pieces bolt to disengage the brake chamber (wind off keys)
equipment in the day cab is installed and fitted in the space under the passenger seat.
Hydraulic jack is positioned on a holder under the driver's seat (pict.1).
sleeper cab versions, equipment is placed in the space under the bed.

Obr. 1

14 Service & Warranty

14 Service & Warranty
14.1 Warranty
14.2 Repair & Maintenance contract

ATK: For actual possibilities use valid specification in Konfigurator

14.1 Warranty

Details of the guarantees contained in LONGTON AVIA warranty.
At present they are normally provided the following guarantees:

36 months - the whole vehicle with unlimited mileage
36 months - paintwork
72 months - corrosion
Performance conditions of the guarantees are set out in the warranty information

14.2 Repair & Maintenance contract

Is in development, and introduction to the various markets will be informed by LONGTON AVIA.